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Occupational Medicine and Hygiene Its Rôle in Britain in Wartime*

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BEFORE I tell you of our experiences since the war broke out, of our problems and our efforts, I should I think speak of the pre-war structure on which we have had to build.

The home of the factory worker and the place where he works are entirely different worlds; the purpose of the one is to serve his individual family, that of the other to serve the needs of industrial processes. This variance of function and environment imports a host of special risks to health and safety, which differ in each occupation and in each factory and are different from those encountered when not at work. Communities, therefore, have had to devise special methods of coping with these occupational problems. In Great Britain, the duty of initiating and enforcing minimum standards of health and safety in factories and mines and in some other occupations is the responsibility of the Central Government. The duty of installing and maintaining these minimum standards is obviously for those who work therein, that is to say, both employer and the worker.

Progress in the prevention of occupational hazards in Great Britain, therefore, is the result of team work. The broad pattern we see is the Central Government, employers, and workers, with their various associations and teams of experts, all working by different routes toward a common goal. Over all, the community as a whole holds a watching brief, which keeps everybody on his toes. This self-responsibility of each section is keenly felt and definitely appreciated, and is the result of the enforcement by law of minimum standards throughout the country.

This does not mean that the conditions in every factory, for example, are alike and that the best is the same as the worst; far from it, a proportion of the factories are constantly being jolted into a proper appreciation of their obligations, but many, and I think I may say the majority of factories, aim at a higher standard and attain it. This un-

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doubtedly produces a competition of good will, and ultimately the legal minimum standards are raised by general agreement.

One has only to compare the minimum standards of the Factory and Workshop Act, 1901, with those of the Factories Act, 1937, to appreciate the outstanding advances made in the intervening years in this way. This latter Act also, after very full debate in Parliament, gave to the Minister from time to time great powers to raise standards and accelerate progress when fact and reason require it. Without the basis of law there can be no order and without order, no progress.

The permanent Departments of the Central Government dealing with health, safety, and welfare in factories and in mines and quarries respectively, are the Factory Department of the Ministry of Labour and National Service and the Ministry of Fuel and Power. The executive powers are exercised by H.M. Chief Inspector of Factories and H.M. Chief Inspector of Mines respectively. They are assisted by deputy chief inspectors, superintending inspectors (for divisions), and district inspectors with junior inspectors (for the ultimate subdivisions of the country), together with a number of specialist inspectors with special medical, electrical, engineering, physical, and chemical, etc., qualifications.

The term " H.M. Inspector of Factories " is over a hundred years old and much valued by the Inspectorate: yet sometimes it misleads visitors by suggesting that our job is analogous to that of a policeman. Of course, we have to maintain legal standards, but that is only one of many duties. Nowadays to inspect is to look and to inquire and, having looked and enquired, to *aid*—and this applies to both sides, employers and workers alike.

The Minister of Labour and National Service, Mr. Ernest Bevin, clearly described, last July in Parliament, the position of the Factory Department in the social services of the country. He referred to its duty of carrying on a great educational work for the safety of the people in industry and its great contribution to the health of our industrial population. He went on, " I think no Department of State has a better record of work for well over a century than this Department can claim. . . . The Factory Department developed a tradition which was twofold and which, I think, in the general administration of industrial legislation, has set a standard in dealing with these problems the like of which does not exist in any other country. It can be described as persuasion with sanctions in the background. This has resulted in giving flexibility for innovations and opportunities for change that one cannot always embody either in regulations or in law."

To you I can perhaps best describe our functions in industry as not so much those of the police, but more like those of a catalyst.

That we must function in some such way is the more obvious when I mention that before the war there were over 280,000 concerns of one sort or another registered under the Factories Act. This number has much increased since, and yet our Chief Inspector, Sir Wilfrid Garrett, has only a total staff of 372 inspectors, at this moment. We can scarcely be accused of surrender to " bureaucracy " here.

You will ask, I think, " how is it possible to cater for all these factories with an Inspectorate of this size? " There is no doubt at all that more work and better inspection could be done with a larger staff, but the gap in peace time between partial achievement and full effectiveness is not perhaps so great as the figures suggest. In the first place the work is compelling in its fascination, and consequently the average weekly output of work per inspector is undoubtedly high.

Secondly, the century old acquaintanceship of industry and the department has ripened into an understanding friendship, and so all sections of industry consciously and materially aid the department's work.

Thirdly, industry on the whole knows quite well those minimum legal standards I have mentioned—they are posted in every factory—and they take considerable pains to comply with them, for employers know that it will not be long before the Inspector for the District hears of any material departure from them. Moreover, if a works acquires a bad reputation in the district and in the local magistrate's court, it takes a lot of living down. Although the fine imposed by the court may be of no account to the firm, the effects of a conviction for a breach of the Factories Act may be profound; certainly in some parts of the country the stigma of having to appear in court to answer a charge is a definite deterrent to wilful negligence. The press too is an extremely valuable aid. Again both the court and the Minister have sweeping powers for dealing with really urgent and bad conditions.

Lastly, because the department is small in number, inspectors know each other personally and the special knowledge and experience of each of his colleagues, and thus the knowledge and experience of the whole department is readily and quickly available for a single firm. Every month the Chief Inspector sends to each inspector, senior and junior alike, his " Monthly Circular," a confidential document which gives the stop-press news on matters of importance—and as it also contains notices of any promotions or transfers, it does not escape careful examination and indexing!

A defect, which I think should be remedied, is that the department has no abstracting bureau of its own. It is true that a number of journals and societies of standing at home and abroad such as the *Journal of Industrial Hygiene, The Bulletin of Hygiene, The Analyst,* The Association of British Chemical Manufacturers, and the Chemical Society, to mention only a few, issue abstracts either privately or publicly, but abstracting for the needs of a particular service, be it public or private, is, as you will agree I am sure, a skilled and delicate business, best done by the particular concern itself, or matters of serious importance to the service will be overlooked.

I should have explained that the term " factory " in the Factories Act has a very wide application. It includes practically all manufacturing establishments, whether they belong to the Crown, municipalities, public corporations, or to private people: as soon as people are employed in building it, working it or pulling it down, the Factory Inspector has duties—he is both accoucheur and mortician, and some employers have rather unkindly suggested that the inspectors' talents lie in the latter direction! It includes warehouses, docks, quays, many work of engineering construction such as tunnels, reservoirs, bridges, camps, and aerodromes. It includes shipbuilding and repairing of ships, whether the vessel is in dry dock, wet dock, or tied up alongside, and also places where sorting, washing, and breaking down of articles by way of trade or for gain is carried on. Do not for a moment think we do all the work —we do not. The strength of the department lies in its legal authority and in the responsibility placed upon the individual inspectors in charge of the 92 districts, as Sir Wilfrid Garrett would be the first to suggest.

The district inspector, a well qualified and experienced man or woman, is the primary, personal, and sensitive anastomosis between industry and the department constantly carrying material between the two structures. The function of the remaining portion of the departmental organization is to nourish and

sustain this living link. To do so it draws upon its own considerable resources, on other government departments, on employers associations, and on trades unions. In turn these draw upon individuals, upon professional, technical, scientific, and legal experts, and in this way the needs of the situation are met. Among these external aids is the Department of the Government Chemist, ready and willing to undertake essential, urgent, and delicate determinations on which often so much depends. Then there is the Medical Research Council with its numerous sections. Two of these sections, the Industrial Health Research Board and the Industrial Pulmonary Diseases Committee are concerned solely with problems of health and hygiene in relation to occupation, and others like the Tuberculosis Committee, deal with subjects on which occupation has an intimate bearing.

The Department of Scientific and Industrial Research, which includes the National Physical Laboratory and the Food Investigation Department, are important sources of information. With the Ministry of Health, whose Chief Medical Officer, Sir Wilson Jameson, had the privilege of addressing you at your Conference last year, we work in the closest possible relationship.

The Local Authorities, corresponding roughly with those of your towns and cities—with their Medical Officers of Health, who have some duties of a general character, not relating specifically to occupation in factories—also give valuable help.

Close contact with the Trades Union Congress and its constituent trades unions, and equally with the many employers associations of particular industries, such as the Engineering and Allied Employers Federation and the Association of British Chemical Manufacturers, is essential for the complete functioning of the department. There are also other important independent bodies, such as the Royal Society for the Prevention of Accidents, The Industrial Welfare Society, The Royal College of Nursing, and the Association of Industrial Medical Officers, some or all of whose activities are related to the subject we are discussing.

A unique aid to progress is provided by the activities of the Joint Industrial Councils for the various industries. These are composed of representatives of employers and workers, and the oldest is the National Council for the Pottery Industry. Among other great achievements, this Council, with the assistance of the department, succeeded in abolishing the main risk of silicosis in the china section of the industry by substituting alumina for powdered flint for bedding the ware.

Last, but not least, are the Examining Surgeons, formerly called Certifying Surgeons. There are 1,700 of these members of the medical profession distributed throughout the country, most of them engaged in the general practice of their profession.

They are appointed to carry out particular duties under the Factories Act and the Workmen's Compensation Act, under the general control of the Factory Department. Their office is of considerable antiquity, nearly as old as that of Inspector of Factories.

You will see now, I hope, how the small factory department works, and why I have suggested that it functions as a catalyst. It observes, accepts, and collects basic facts from industry and elsewhere which have any bearing on health, safety, and welfare, assesses their value and importance, makes inquiries and investigation, and, when its own knowledge and experience do not suffice, submits special points of difficulty to experts competent to deal with them.

Its specialist inspectors are in close touch with all the institutions and persons especially concerned with their particular problems and frequently get

advice from them. Other problems are settled by small committees of experts set up to advise the Chief Inspector; in this way the department keeps in close touch with outside opinion and is able to draw on wider sources of knowledge than could be supplied by any official research institution. The field work of actual research is often carried out by its own inspectors, and through them a solution is often reached; but if the subject proves too big it is handed over to outside bodies to carry through the full examination of the problem. It considers its findings with the twofold object of providing the solution to the problem and determining the most practical and feasible application to industry of any remedial measures required, and then returns the results and the department's recommendations to industry. At the same time it enforces the practical minimum legal standards in these matters. But beyond all, the inspector must be impartial and keep inviolate the many secrets and confidences entrusted to him.

And so, I think you will agree that the Inspector of Factories has a happy, friendly, and fascinating, if exacting job.

EFFECTS OF THE WAR

I think history will stress two factors as having a preponderating influence in shaping our war effort. One is the disparity between Germany's population and our own, and the other is the unpleasant proximity of enemy activity to much of our daily life. The country, therefore, has to insure that every man, woman, and young person contributes his utmost to the common aim, and that his individual effort is so applied and distributed as to minimize the effects of possible enemy action. The Government steadfastly implements this decision, and the resulting upheaval in the life of the individual has to be experienced to be appreciated.

Mr. Ernest Bevin, the Minister of Labour and National Service, is, of course, charged with the mobilization and use of our man power in the widest sense and never for one moment has the requirement of labor and national service for everyone been forgotten.

As he explained to Parliament, it was obvious that there would be many problems of an industrial character not entirely new, but certainly more comprehensive, that would have to be dealt with as the war proceeded. In consequence, the Factory Department was transferred from the Home Office to the Ministry of Labour and National Service in June, 1940, to facilitate this work since, as the Minister explained,

> . . . the transfer gave to the Ministry of Labour in its development of the other schemes associated with the mobilisation of man power, valuable experience, long tradition, great knowledge of the factories in the Country and contacts which served a double purpose. . . . Therefore, in the first instances, its great value was that it gave us a broader foundation on which to build and at the same time placed valuable experience readily at our disposal.

Thus, many new duties were cast upon the inspectorate. Apart from the inspectors seconded for special purposes such as research, camouflage, lighting, efficiency of blackout, and prevention of explosion, duties in connection with the development of communal feeding in factories, the provision of air-raid shelters, securing the training of factory personnel in first aid, fire fighting and anti-gas measures and the installation of the necessary equipment became part of their daily activities. Schemes for fire watching and fire fighting, welfare arrangements within the factory, measures for the education of new and untrained labor in self-protection, aiding in the concentration of nonessential industries and in the collection and transfer of redundant labor, all caused much additional work. In addition, the vast building schemes for camps, aerodromes, and factories, often far removed from

towns and essential services, became the particular charge of a section of the department.

It was also recognized by Mr. Bevin that the war would introduce another series of problems that would militate against the war effort—the troubles outside the factory, troubles due to traveling in the blackout with restricted transport facilities, troubles of shopping that bear particularly on the housewife doing the double job of running a home and working in a factory, troubles of transfer to new areas and consequent billeting on private families or in hostels, troubles of continuing to keep at work while the home is bombed and the family spends the night in shelters. In fact, it may be said that in the first year of the war these outside troubles put a greater strain on the workers than the strain of additional hours, blackout, etc., inside the factory. To deal with these troubles Mr. Bevin appointed a number of welfare officers located in all the centers of industry, who, because they dealt with the problems outside the factory, have become known as "outside" welfare officers. The work done by these officers has done much to smooth the way toward the war effort that we have now reached.

The inspectorate solved a multitude of day-to-day problems and materially facilitated quick readjustment following on the upheaval, expansion and redistribution of the industrial man power of the country. It will be observed, however, that all these activities are directed to securing the safety, health, and welfare of the industrial population. At the same time, the other bodies already mentioned whose work is complementary to that of the department have also had to expand and adjust their activities to the new conditions. Thus, the Industrial Health Research Board was reconstituted to bring it closer to the needs of the war situation. Dr. J. C. Bridge, the Senior Medical Inspector of Factories, was appointed to the board, and another of my colleagues, Dr. R. S. F. Schilling, seconded as Secretary, and Professor A. W. H. Ellis has been appointed to the new post of Director of Research in Industrial Medicine.

The board issued several emergency reports and has numerous investigations in hand directed to determining data of essential importance for the more accurate approximation of the human machine to the national effort. The Industrial Pulmonary Diseases Committee, of the Medical Research Council, whose Secretary, Dr. E. L. Middleton, is another of my colleagues, has recently completed its investigation into chronic pulmonary disease in South Wales coal miners, and the council has published Volume 1 of its report. The report correlates x-ray appearances in the lungs with certain characteristic pathological changes not hitherto described. A second volume containing a further series of research reports on the subject is to be published shortly. An extensive program of research on the effects of exposure to TNT was initiated by the Medical Research Council and is being actively carried out. Another report of the Medical Research Council of importance to the subject of our discussion which has just been published, is the *Interim Report of the Committee on Tuberculosis in War-Time.*

The Minister of Fuel and Power also has accelerated progress of new measures for securing the health and welfare of miners, particularly in connection with the employment of juveniles and female workers and in the protection of workers against dangerous dust. Regarding protection against dangerous dust, a new code of Special Rules for Slate Miners has come into force this year, and a Code of Regulations for the Prevention and Suppression of Noxious Dust in Coal Mines is under consideration and is expected to be put into force in the near future. Extension of schemes

for rehabilitation of miners is also foreshadowed, as also is a considerable increase in the Medical Department of the Ministry.

The Ministry of Supply, a ministry set up wholly for war purposes, is now the largest single employer of labor in the country. It has Royal Ordnance Factories, most of which are new factories which have had to be staffed by labor at first mostly inexperienced. This involved the Medical Department of the Ministry in much planning of preventive measures against occupational diseases, particularly those associated with the manufacturing and handling of explosives, such as toxic jaundice, dermatitis, and other slighter manifestations of exposure to TNT, and disturbances of health due to other types of explosives. Consequently the Ministry has had to set up large medical and nursing services for the supervision of workers employed in the Royal Ordnance Factories. In addition the provisions of hostels and welfare arrangements in these factories, often isolated; billeting; special means of transport to and from work, and numerous matters of welfare generally have been dealt with by the Ministry of Labour; the provision of special rest centers where workers can obtain a holiday in pleasant surroundings away from their dangerous work, is being explored.

Now, some observations on the difficulties of the Factory Department and the measures we have taken may be of interest to you.

First of all we have endeavored to maintain in every factory those minimum legal standards of health, welfare, and safety to which I have referred. This has often been a difficult matter because of the immense dilution of the existing trained and experienced staffs in factories in order to permit of the required expansion of production.

The most important general factors due to war conditions are: the effects of the blackout, effects of enemy action, overwork, overstrain and too long hours of employment, extension of employment of women in substitution for men, changes in the age distribution of workers, and infestation by lice and scabies and the possibility of epidemics. More important special factors are the incidence of dermatitis, of cases of gassing, and of poisoning.

EFFECTS OF BLACKOUT

This seems to be the most important single adverse factor, with the possible exception of transport difficulties. At the outbreak of war there had to be an immediate imposition of a complete blackout—this had two main effects—first, it interfered greatly with the ordinary natural ventilation of factories, gave greater opportunities for the spread of respiratory infections, and the stuffy atmosphere depressed the human machine. Second, the restriction in natural ventilation definitely caused accumulation of fume in some processes with resulting increase in cases of gassing. Many cases of gassing would never have occurred but for the damping back of fume by emergency methods of preventing glare. You can imagine how difficult it was to black out, for example, bessemer plants and coke ovens, and yet not interfere with the egress of the vast volumes of gas and fume evolved in some of these processes. Further consequences of the blackout and restriction in general ventilation were in some processes a great increase in the temperature to which the workers were exposed: this, together with the lack of air movement, obviously may quickly cause a serious situation.

Better methods of blackout were devised which incorporated light traps and yet permitted greatly improved ventilation. Extended use was made of mechanical methods of ventilation and of air movement and, although I do not suggest that conditions are yet perfect, the major part of this work has been

completed and conditions correspondingly improved.

In some factories emergency methods of obtaining blackout resulted in the work having to be carried out continuously in artificial light. While no evidence of any definite injury to health was found to result from this, it is obvious that a permanent blackout of this character has psychological effects of a depressing character. Steps have therefore been taken to restore natural lighting in daytime wherever possible.

The blackout has undoubtedly been a very important factor in increasing accidents both on the roads and also in particular occupations, for example among dock workers.

EFFECTS OF ENEMY ACTION

These include of course direct injury to workers by enemy attack, mental strain and physical discomfort, disturbance of gas, water, electric supply and transport services, loss of sleep, and irregular food supply. Such effects of enemy action do, of course, definitely slow down production, or under certain conditions stop it temporarily. The most long continued bombing was directed against the London area and people got weary of it, not so much because of the danger, but because of the attendant hardships experienced, including lack of sleep and the very much longer daily effort required to carry out normal duties.

My own view at the end of the winter 1940–1941 was that the Germans would have had to continue their nightly raiding of London for very many more months before they could have succeeded in doing more than partly depressing industrial output in this area. The Londoners stood the winter, dislocation of heating, lighting, transport, and food services well, and with the advent of the longer days and warmer weather nothing the enemy could have done in the way of continued bombing could have nullified this natural relief. The speed with which bombed factories were got going again was a revelation—production being restarted often within a few hours under tarpaulins.

The tube or subway system of London provided good additional shelters which were dry and warm and a good asset in maintaining individual resistance, although in the earlier stages, before sleeping accommodation, medical supervision, feeding arrangements, and means for quick washing and disinfestation of bedding were inaugurated, there were opportunities for the spread of infectious disease and of lice and scabies. However, as it was, in the bombed areas throughout the country after that winter, the people felt like veterans, and experience dispelled the fears of the imagination.

INFESTATION BY LICE AND SCABIES

There has undoubtedly been a great spread of scabies and infestation by lice among the population, but energetic measures on the standard lines and a new order of the Minister of Health, gave the additional powers required by local authorities to deal with the matter. Obviously, lice and scabies are continuing problems in the present circumstances, and continuing energetic measures are required to keep them within bounds. Scabies is not a disease which one can afford to neglect, because of its power of depriving affected workers of their sleep.

With lice, however, the possibility of typhus being introduced into the population has always been the concern of the Ministry of Health. So far, Sir Wilson Jameson told me the other day, there has not been a single case of typhus in the country.

HOURS OF EMPLOYMENT OVERWORK AND OVERSTRAIN

Overstrain is an inevitable concomitant of war and particularly so when a

country has not geared itself up for war in times of peace. A warship has its maximum speed and also its "economical" speed and it is the economical speed which gives its maximum radius of action. So it is with the human machine; its economical speed gives the highest total output over a considerable period of time, but if the human machine is overstrained, the accident rate goes up greatly and faulty workmanship increases also. The elementary principles so well proved in the past tended to be lost sight of and had to be re-emphasized. On the whole, however, it was the vicissitudes of war which necessitated at certain times during the past three years an increase of speed beyond the economical in order to make good the losses. The nation certainly geared itself up after Dunkirk to an unprecedented output which served the pressing necessities, but the inevitable reaction followed, and it is clear again now that the optimum is a 5½ day week with 1 day off and 1 short day. There is then a reserve, which if the necessity arises will permit of temporary spurts to meet vital needs—and there are still vital needs.

The Factories Act lays down limits of hours for all protected persons, that is to say, women and young persons of both sexes between the ages of 14–16 and 16–18 and these have been slightly extended by emergency powers.

The extension to which my country has gone in this respect may be of interest. Briefly, it is as follows: Young persons between 14 and 16 have had their hours extended from 44 to 48 per week, women and young persons from 16–18 of both sexes can have their hours increased by order of the Minister, and in some bottle necked occupations hours of 60 per week have been worked; but in general the hours of these protected persons average about 54 to 56. Women over 18 and male young persons over 16 have been allowed to work at night, but no girl under 18 and no boy under 16 is employed at night. The total hours of employment per week is, however, not a complete solution, there are so many other factors which cause overstrain in wartime. Long periods of traveling to and from work under uncomfortable conditions, lack of sufficient sleep, personal anxiety, shopping difficulties, and many other factors have to be considered. The nature of the work itself, degree of experience and individual capacity of the worker are also factors which could be properly assessed in the perfect system. Any system devised, however, can only cater for averages so as to maintain the health, strength, and production of the majority at the highest level. In wartime inevitably there will be strain to the individual, particularly to key-men, but it is the average that counts.

However, certain basic factors have to be attended to: these are, of course, limitation of hours of employment, measures to promote general health and welfare, and special measures for special occupations. Where there is definite exposure to cumulative poisons, limitation of the length of spells of employment involving such exposure and alternation of employment, so that risky work is alternated with other work not involving the risk, are supremely important, as for example where there is exposure to radioactive materials.

The fighting forces could not be maintained without medical, nursing, and welfare services, and it is well if one looks upon the industrial population as a different kind of fighting service requiring similar attention. The first thing to do was to extend greatly the provision of medical, nursing, and welfare services in industry and, at the same time, to secure that workers were not dependent for a satisfactory main meal on what they could bring to work from the family larder, but could obtain such a meal as an addition in the factory itself.

The Minister, therefore, issued two Orders, one the Factories (Medical and Welfare Services) Order, 1940, the other the Factories (Canteens) Order, 1940. The former enables the Chief Inspector of Factories to require factories on war work to install doctors, nurses, and welfare officers, the latter, in factories employing more than 250 persons, the establishment and maintenance of suitable canteens where hot meals can be purchased by the persons employed. Many of the larger works, of course, had these facilities in operation before the war, and they had proved their worth. The result of the Orders was that the great extension desired was obtained, and it is of some interest to note that voluntary acceptance of these requirements was almost unanimous and in no instance was it found necessary for an actual Order to be made under the Factories (Medical and Welfare Services) Order. A difficulty, however, was to find the whole and part-time doctors and the nursing personnel required. A further point which experience has shown is the value of medical and nursing services in a factory in aiding morale under "blitz" conditions. Particularly is this true of the factory nurse—a good nurse has a remarkable influence in many ways in a factory.

In order to fill these requirements the Minister found it necessary to provide introductory courses of instruction for doctors, nurses, and welfare officers in factory work. Universities, the Royal College of Nursing, and the Industrial Welfare Society, experienced doctors and nurses from factories, and members of the department all coöperated in giving short and practical instruction, so that these officers could function with the minimum delay.

It should be observed that the function of Works Medical Officers under the Order is not to give treatment such as the worker may obtain from his own doctor, but to give such advice as will aid in keeping the worker fit and insure him obtaining appropriate treatment quickly when required; he should study working conditions in the factory so that a high standard of hygiene, first aid, etc., is achieved and maintained, and act as a liaison officer between the factory and the various health services, including the worker's own doctor and the Medical Inspector of Factories. The Works Medical Officer must, of course, maintain a completely impartial attitude so that he obtains and retains the confidence of all sections in the works. Similarly, the provision of canteens on a very large scale in factories proved to be a great stabilizing influence and is one of the most important wartime measures in maintaining health so far in operation.

The results obtained to date are that about 96 per cent of the factories employing over 250 persons have canteen facilities and the workers are thus able to get a substantial midday meal apart from their normal rations. This has been the method adopted by my country to make extra rations available to the industrial workers and can be contrasted with the German method of extra controlled rations for their heavy workers. It is a fact that the health of our industrial workers is better than in peacetime and I think this can be put down to the fact that additional employment and our rationing scheme have made for a better distribution of our food among the poorer sections of the community, and our canteens have provided for the industrial worker the extra food he must have for sustained effort. In the smallest factories where canteen facilities cannot be provided individually or by arrangement with adjoining factories, the use of the British Restaurants—similar canteen facilities set up by the Ministry of Food and run by the local authorities for the civilian population generally—fills the gap.

In these ways the basic general needs

of the factory population for maintenance of health and welfare have been catered for, and the system insures that special needs of a factory, say after bombing, are dealt with immediately.

Other general features to which reference should be made are the effects of substitution of women for men in industry and the age distribution of the industrial population. From the outset it was obvious that the most complete substitution possible of women for men was essential, and this was tackled by the Minister by registration of women, grading them by means of interview and allocating them to work for which they were most suited, and wherever possible to work for which they expressed preference. In addition very large numbers of volunteers were recruited. At the same time, by means of application of Essential Work Orders, the haphazard shifting of individuals from job to job was prevented. This stabilized experienced labor and permitted a rapid building up on these cadres.

It is obvious that now we have nearly reached the limit of conscription of men and women into the war effort. Part-time in industry will provide some further addition by means of employment of women, who have other inescapable duties.

The cheerful acceptance by women of all classes of these measures, or rather, I would say, the tremendous impetus given by women themselves to this movement is remarkable; not only that, but their adaptability and acceptance of responsibility is outstanding. Women are now engaged on work for which hitherto there has been no precedent and the substitution of women for men is still proceeding. Naturally enough this substitution casts considerable additional duties upon the Inspectorate, since many special measures have to be taken. Fortunately the department itself had been a pioneer for many years in this respect and had a nucleus of women inspectors of some 30 per cent of its strength long before the war. These women inspectors had already proved themselves to be of equal capacity with the men and, of course, were specially experienced in the problems of women labor. The number of women inspectors has been increased since the war and the work they do both in the general work of the department and regarding the special requirements for women labor is invaluable.

A continuing anxiety to the Medical Section of the Inspectorate has been the possibility of special physical strains to women, resulting from their work in heavy occupations. Every alleged case or hint of such injury which has come to our notice—and as I mentioned before there is little of importance that does not come to our notice through some channel or another—has been carefully followed up, and so far we have no evidence to support suggestions that the work they are doing has caused damage in this way.

Much depends on the methods by which inexperienced women are introduced into industry. The best method, whether it be a light or a heavy industry, is by way of comparatively slow infiltration in the early stages. In the first place, where women have not been employed in the process before, it is necessary to select with great care a small number of intelligent women with personality and sincerity, capable of leadership—these will provide the supervisory grades of the future. The men then teach the women the job, paying special attention to the tricks of the trade associated with so many operations—for example, there is a special knack in taking off bricks from a brick press and this can be taught. Such knowledge means the difference between the likelihood of injury or not. Similar considerations apply to the making of drain pipes and many other occupations. When these key-women are thoroughly trained and experienced, then is the

time to introduce other women to be trained by them, and the substitution is complete. In fact, it seems that there is no limit to what women can do safely if they are properly trained, gradually attuned, and provided with suitable and safe clothing and decent amenities.

One cannot leave this subject of the general influences affecting health without referring to boredom. Boredom, as is generally agreed, is dangerous to health, safety, and production, but much can be done to relieve it. Suitable selected music, by means of radio has been provided by the BBC; concerts in the factories by ENSA (Entertainments National Services Association); dances, socials, sports, etc., encouraged by the Welfare Section, and experiments have been made in the use of broad color schemes in workrooms. More can be done with the object of making the worker feel that, whatever may be his difficulties owing to being away from his home and living possibly in uncongenial surroundings, his life at the factory is pleasant and supplies some of the amenities of which war has temporarily deprived him.

These upheavals in the national life have resulted in considerable changes in the age distribution of factory workers. So far as men are concerned in some industries there has been a large shift to the older age groups; thus in one industry, employing almost exclusively men at the moment, I found that approximately 50 per cent were aged between 30 and 50, and 50 per cent over 50, well over 10 per cent being 60 or over. I have not exact figures for the age distribution of the women in industry yet, but it is clear that in general here is the younger element (particularly under 25) of the factory population.

This distribution brings added responsibility to the medical services, and in this connection reference may be made to the increased incidence of tuberculosis in young women. The increased possibilities in wartime of small epidemics in factories of diseases like diphtheria must not be overlooked. Obviously too, the strain on the older men is increased. I have no doubt that a cause of absenteeism among such men is physical inability to do the work to the capacity they did 20 years before.

Perhaps we might now touch briefly on the trends of specific occupational hazards. In general some have increased and some have diminished, as one would expect. Cases of lead poisoning, for example, have gone down because some of the main processes which caused lead poisoning have been shut down. Cases of gassing and dermatitis have greatly increased. The cases of gassing reported in accordance with the Factories Act have increased fourfold as compared with 1939, but the fatalities have increased in less proportion—30 per cent of the cases were due to carbon monoxide; 24 times as many cases of poisoning by nitrous fumes were notified in 1941 as compared with 1939, but there was only 1 death. The cases of gassing by trichlorethylene in 1941 were over 12 times as many as in 1938. In fact, almost every source of gassing in industry has produced an increased number of cases of poisoning.

Cases of toxic jaundice due to TNT are an interesting and important study. During the 13 months from July, 1916, to July, 1917, inclusive, the cases of toxic jaundice notified totalled 308, with 79 deaths. For the corresponding months of 1941–1942 there were 37 cases with 10 deaths. The reduction is, I think you will agree, astounding, and it is not due to a decreased population at risk. To what then is the improvement due? Partly it is due to improved conditions and precautions as compared with those in existence at the end of the last war, and these are still being improved, but this does not wholly answer the question. One can only surmise

that TNT is merely a precipitating factor in the production of toxic jaundice. What then is the primary factor?—constitutional perhaps. In any case it may be that a healthier population is the answer, and in this connection much credit must go to the Ministry of Food for having planned and secured a more complete and balanced diet than was possible in the last war.

Dermatitis is not compulsorily notifiable under the Factories Act, but the voluntarily reported cases are some measure of its incidence; in 1938, 2,195 cases were reported, while last year the number had gone up to 7,291—over 3 times as many. A third of these cases were in the chemical industry, including the manufacture and handling of explosives. Another large increase was associated with the engineering industry, much of it being due to oil. Dermatitis is an insistent problem because, although it is not so serious in its effects on health, it is a strain on production and the tendency to recurrence is a weighty factor. Some of the most potent dermatitis producers are found among the range of explosives, tetryl being a good example. An interesting feature about tetryl dermatitis is that, starting with a fresh population at risk, the peak in the number of the ensuing cases of dermatitis will occur toward the end of the second week of employment. It does appear that there are a certain proportion of extreme susceptibles to tetryl, and these have to be transferred to other occupations.

On the other hand, care will have to be taken to avoid wholesale transference because of dermatitis, for very obvious reasons. It seems that if workers do not develop dermatitis within the first fortnight from tetryl, they should not do so. Subsequently, if their health is maintained and the ordinary preventive measures are not only adopted but enforced, all should go well. The prime essential, as you will agree, is thorough washing—which means actual supervision of each worker to see that this is done. It seems probable, too, that wherever possible workers with dermatitis should be kept at the work while under treatment, rather than put off and possibly become so sensitized that they can never go back to the dermatitis producing work.

The use of barrier substances, of course, has its place, but these cannot be in any sense a substitute for washing. A good deal of work is being done in my country on barrier substances, and it will be well if some standardization of suitable compositions can be achieved. Both our own department and the Ministry of Supply are to have the help of a consultative panel of dermatologists, which will help materially with the solution of these problems.

LUMINIZING

The use of radioactive substances in paints for painting instruments for aircraft and for some other purposes have caused us much thought for many years. With the expansion of this work since the outbreak of war and the rapid introduction of labor into this process, it has been considered necessary to devise and put into force a special Order embodying regulations of a preventive character. These are very strict and among other things limit the hours of employment in luminizing; prescribe special rooms for this work; properly designed benches with smooth surfaces; smooth floors; local exhaust ventilation; applicators, not brushes; glass screens between the worker and the work; protective clothing and protection of the stock of luminous compound; periodic medical examination and strict rules regarding washing; periodic blood examinations are carried out.

No illness of serious character which could be ascribed to this work has been found yet, but one or two cases with

burns have been noted and suspended, as also some workers with slight changes in the white cell counts, which may be suggestive. We have had to keep a lookout to prevent these processes being done by outworkers in their own homes.

FIRST AID ARRANGEMENTS

An important matter which has had to be kept in mind constantly has been first aid arrangements. Our proximity to enemy occupied bases has necessitated not only general tightening up of first aid arrangements in factories, but also a great expansion in trained personnel. Arrangements have had to be made to cope not only with day-to-day matters, but also with casualties due to enemy action. Moreover, the possibility that the enemy may use gas at any time has considerably complicated the situation.

The idea now is to concentrate all medical and first aid arrangements both for day-to-day and air-raid conditions in a single combined protected first aid post and ambulance room. Then if an "alert" occurs there is no transference from peacetime ambulance room to wartime first aid post, which has obvious operational advantages.

You will see that I have endeavored to survey generally the reaction of my country to the demands the war has made on the human machine in industry; the difficulties we have encountered and the principles we are following in sustaining the health, safety, and welfare of the industrial army.

There is much more I would have liked to have discussed with you, such as the prevention of accidents, a problem of enhanced moment when the industrial population is expanded so rapidly. Perhaps, however, I might refer you to the *Annual Report of the Chief Inspector of Factories* for last year which has just been published.

At no time in our history has the individual, however he be employed, given himself to the national effort with such enthusiasm and devotion. We believe that much that we have evolved in the stress of war can be a permanent contribution to the well-being of those in industry, and this knowledge is an added spur to constructive planning in the bitter present, so that when the peace we fight for is with us, the united achievements of our two nations in occupational medicine and hygiene will be profound factors in the betterment of the human race.

War and the Health Department*

A. Across the Nation

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IN the late summer of 1940 it was evident that the national defense program would place an abnormal strain on hundreds of communities. Military camps and large war industries were established in many undeveloped regions where health and sanitation facilities were of the most rudimentary kind. This presented a health hazard to the troops, for soldiers spend much of their time outside the camp boundaries. With regard to war industries, the hazard was equally great, for in today's warfare an unfailing service of supply is essential to military success. Conditions which jeopardize the health and productivity of war workers are a direct threat to national security.

In larger and more developed communities the situation was somewhat better. Modern facilities were at hand which provided reasonably adequate service for the normal population. Once the impact of the defense boom made itself felt, however, existing plant and equipment were no longer sufficient. This health situation was one factor in these communities that led the President to create the Office of Defense Health and Welfare Services under Paul V. McNutt.

Many rural areas, as well as small towns and cities, were literally swamped with construction workers who came to erect cantonments, airfields, munition factories, and war production plants. Sudden population increases of 100 per cent were not uncommon, and in some instances communities swelled to ten times their normal size in a period of a few months. Unfortunately, the construction companies and sometimes the army failed to meet the need for supplying their workers with temporary housing, basic sanitary protection, and medical care. Trailer camps and shack towns began to dot the landscape. Doctors' offices and hospitals were soon severely overcrowded. Water supplies were threatened with exhaustion and sewage systems with breakdown. That is, assuming that there were hospitals, public water supplies, and sanitary sewerage—which often was not the case. As the construction period neared its end, soldiers or war workers arrived to man the new camps and factories. Many of them brought their families. A horde of others, service workers and camp followers of every description, also appeared on the scene, most of them entirely legitimate.

With varying degrees of intensity, this was the situation in several hundred communities. In general the picture was one of local congestion and disruption arising out of the national crisis. Not only was the problem national in origin, but its repercussions were nation-wide. Every one of the affected areas was a vital battle station in the conflict then moving closer to

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our shores. At that time few realized how close it was.

Because of the nature of the problem, and because local resources were usually inadequate to the task of solving it, federal aid was imperative. Fortunately one major agency of the federal government was on the job and collected fairly accurate data upon which to gauge the health needs of both individual communities and the nation as a whole. In the fall of 1940 the U. S. Public Health Service began a systematic series of reconnaissance surveys in vital defense areas. Teams of medical officers and sanitary engineers of the Service visited the areas, made a complete inventory of existing health and sanitation facilities, and estimated the types and amount of additional facilities required to care for the anticipated influx of population. The Service began expanding its grants for service by the states and localities. In many cases the local response and the community sense of responsibility were splendid. The state health departments in many states, and frequently the governors themselves, assumed leadership. The Public Health Service made lease-lend personnel available in especially needy areas. The figures showing the increase are impressive. Health units have increased by 415, or 74 per cent, and the counties served by 1,067, or 140 per cent.

But personnel was not enough; sewers and water lines were needed, quarters for the personnel, and hospitals for the normal proportion of sick. The little places and some big ones had exhausted their own resources, so in January, 1941, the President asked Congress to set up a program for grants-in-aid for facilities. In June, 1941, this federal aid for construction was made available through enactment of public law 137, commonly referred to as the Community Facilities Act. This is title II of the Lanham Act for war housing. The original appropriation provided $150,000,000 in federal funds to aid in the construction of needed public works, including health and sanitation installation, in communities where increased populations due to military or war industry developments imposed an excessive strain on existing facilities, and the community did not have the funds to pay for them. Later the amount available was increased by an additional $150,000,000. The program thus launched was placed by Congress under the administration of the Federal Works Agency. Priorities will limit actual construction of schools, hospitals, sanitary installation, and recreation buildings to about $150,000,000. Under the instructions of the President, the U. S. Public Health Service as one of the technical agencies of the government, undertook to investigate and determine the defense-connected need for all proposed hospital and sanitation projects, and to certify to the Federal Works Administrator projects which could be constructed with propriety under the terms of the Act.

It was inevitable that difficulties and delays should be experienced in a program of such scope in a time of crisis. In the first place, unprecedented demands had already been made on the construction industry by army cantonments and war industry plants. Moreover, there was considerable misunderstanding as to the kinds of projects contemplated by the Act. Many communities failed to recognize that this was to meet new war emergencies, not to remedy long standing deficiencies. It was natural for each community to press its own claims, but pretentious installations for the coming generation could not be permitted and the money had to be distributed where it would do the most good. Applications were filed for projects which bore little relation to the defense program and the total of askings ran to $1,200,000,000.

In some cases applications for projects were filed in anticipation of needs which

did not materialize. Difficulty was often experienced in reaching an agreement with the local sponsor about its share of the cost, for many places were doubtful whether the boom would continue after the war, when they would still be paying. Some like Norfolk, Va., had been burned that way after the last war. In some localities there was no political unit with legal authority to sponsor a project or to pay for any part.

After bombs fell on Pearl Harbor many readjustments were necessary. Materials were short before that, but after December 7 it became worse. Projects had to be restudied and plans altered so as to strip critical materials.

Temporary construction took the place of permanent, and many projects had to be scaled down. This naturally affected the willingness of localities to contribute and a new basis for financing had to be worked out. Transportation, or rather its growing limitations for want of rubber, had serious effects. Housing projects had to be moved closer to bus lines or closer to factories. This meant re-study and re-location of the various utilities projects that served the houses. Moving the housing projects near the plants reduced the need for facilities in nearby towns.

In summary, during the fiscal year ending June 30, 1942, 4,468 applications were received by the Federal Works Agency. Of this number, 547 were for sewers and sewage treatment plants, 538 for water works, 567 for hospitals and additions, and 212 for health centers. The amount asked was $140,000,000 from the government, with $28,000,000 offered by the communities. That was the expectation if materials had been available—the actual results had to be different.

On August 1, 1942, a total of 206 water works and sewerage projects and 74 hospital and health center projects were under construction and were approximately 40 per cent completed. The estimated total cost of these projects is about $68,000,000.

As you can see, there remains a balance of considerable size from the Lanham appropriation. This appropriation has been considered available for grants for maintenance and operation, nearly all of which went for additional school teachers during the first year. There is some feeling now that this balance should be used for greatly expanded local services in the health, recreation, and welfare fields, and of course the needs are great. But several warning notes need to be sounded.

It is clear that the intent of Congress was primarily to provide facilities and not services. I gave the detailed testimony upon which the first appropriation was based and it showed only about $18,000,000 for operation, mostly for schools, out of a total estimate of about $275,000,000.

A second question arises when funds are offered to the states as in this case paralleling exactly those which Congress has otherwise provided, and has limited by certain conditions, such as auditing, civil service, etc., and which Congress has assigned for administration to other technical agencies of government.

Furthermore, all existing grant programs are through the states, not to localities direct—that is not only in harmony with the general pattern of our government but it has been adopted as the definite policy of government, applying to all grants administered through the Federal Security Agency and others so far as I know.

This general health and sanitation program has some interesting sidelights. The shortage of doctors, nurses, and other trained professional personnel is its most serious handicap. So far as doctors are concerned we are approaching the point where the army will have to work out a system under which their tables of organization will not actually be filled until their units approach the

front line action that requires that number of doctors. For they cannot themselves afford the serious depletion of man power in production and of morale on the home front created inevitably by the lack of at least minimum medical service. Only 3 soldiers in 7 ever reach the front.

The same comment applies to nurses, but here it is easier to speed up training processes in time to produce results in this war. That requires a greatly stepped up recruitment of students. I would note in passing that you will not get them unless better pay is offered to compete with war industry.

And it means further the increase of non-professional assistants, both in hospitals and in the public health field. Our hospital ratio of aides to nurses now is 1 to 1.8, compared to 4 aides in England to 1 nurse. You in the public health service will have to expand homemaker service that enables the visiting nurse to carry an even greater load.

There is even the possibility of a nurse supply board like procurement and assignment.

Do not forget industrial medicine. Our office is being asked by the War Manpower Commission to do a coördination job in the field of health and welfare within the plants, and we are counting on the full coöperation of both the Department of Labor and the National Safety Council. Here, too, the skilled personnel is rapidly being drained off, while the accident rate goes up and absenteeism increases. In a couple of months our office should be able to give a total picture, and it will not be good enough, for many if not most of the small plants and many of those rapidly expanded without prewar experience in this field, do not know how. But the government services, again working through the states, can and must be expanded to get the job done. It will be economy in man power and money in the end.

The venereal disease program has made great strides in the places that affect soldiers and sailors. Delays in providing quarantine facilities are, I trust, now overcome. It is mainly an educational problem. Army and Navy officers in the line and even in the Medical Corps needed to learn, and a new group of more than 130 specially trained venereal disease officers are out in the field doing that within the services, while at the same time they improve the whole process of treatment and of relations with the civilian health departments in case finding, etc.

Even some health officers need education. Within the last week I have heard of one state and one local health officer who say that all this noise about syphilis is an exaggeration. The state man said that it will not get to the "mental" state before the soldier gets to the front and perhaps gets shot anyway, so there is no need for all this propaganda. The local official said that the Selective Service examination rate in his city did not mean anything because it must have been acquired outside the city anyway.

That kind of attitude reflects the need for the education of the medical profession itself, and you will have to do that by vigorous campaign, not by incidental absorption. They will absorb the truth eventually before they die, most of them, but that takes too long.

Then police and judges and prosecutors need to know a lot more. Our social protection section is working with the International Association of Chiefs of Police and with the American and state bar associations. Professional backing in these fields is just as necessary as in the medical field. These law enforcement officials have just as erroneous ideas, many of them, about prostitutes and how to regulate them, and they are just as intelligent in their coöperation when they learn as the most experienced health officer.

Always at the end and at the begin-

ning we have the public, the leading citizen, the man in the street who has to have the story in his own language, and who must have a chance to learn in order to reach our goal, the elimination of venereal disease as a health menace in war and in peace.

In my book, syphilis and gonorrhea are epidemics, whether that is the right medical term or not, but there are many others. You in the health departments under the outstanding leadership of the Public Health Service and Dr. Parran are the front line of protection and you cannot fail. We cannot afford another 1918 influenza epidemic or anything like it. So when someone tells you that even the personnel and facilities of the minimal character which we can be allowed under military priorities are not necessary, you fight and we will fight with you. We cannot allow a single hole in the dike if we are to win this war.

The whole program has required a high degree of coöperation between federal, state and local health agencies, and that must continue. I am sure that health officers and agencies appreciate the significance of this program as the foundation of national security. Yet we are all aware that every facility which might be desirable cannot be provided during the trying days ahead. It will be increasingly necessary to distinguish between what is indispensable and what is not. With intelligent selection of what we must have and vigorous promotion of our program of using those facilities we have a basis upon which the entire health organization of the country can and must be conducted for the period of the war and until victory.

War and the Health Department*

B. In a Western County

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THE responsibility which now challenges every civil health organization and every health worker is the provision of the best possible health protection for the army behind the Army. To do this most effectively requires continuous, careful analysis of the rapidly developing war effort as it relates itself to the health programs of the various communities.

Governmental leaders, not all of whom are acquainted with the relative values of public health procedures, have in some cases brought pressure to establish new programs and in others to discontinue procedures of proven merit. Health administrators in most cases seek and welcome the viewpoint of governmental leaders not directly responsible for the health program. Leadership in shaping this specialized service to meet the ever changing needs can best be assumed however by the health administrator, provided he is well informed and alert. It is of paramont importance that the health program be related to the war effort, but it is also important that a sense of balance based on previous experience be maintained.

This discussion concerns War and the Health Department in a Western County. In some areas the county is a rudimentary organization. Our western counties on the contrary are strong governmental units. Los Angeles County's annual budget is over ninety million dollars. Over half a million of Los Angeles County's three million population live in unincorporated territory, some of which is as densely populated as its cities.

The Los Angeles metropolitan area is today one of the great industrial sections of the nation, with plants turning out planes, ships, guns, and scores of auxiliary products necessary to an army fighting a war to the finish and to a population which is now just beginning to learn the belt-tightening process necessary to victory. On the other hand, it is the richest agricultural county in the United States, producing dairy products, fruits, vegetables, grains, cattle, hogs, and other farm produce.

Health service in the unincorporated territory and in 40 of the 45 cities of the county, including a population of over one million, is administered by the Los Angeles County Health Department, which has a budget of approximately $1 per capita served.

The program was well developed under the leadership of the late Dr. John L. Pomeroy, Health Officer of Los Angeles County for 27 years, until his death in March, 1941. Under his direction health facilities were brought to the neighborhood through the medium of modern health centers. Over a period of 20 years, 12 of these were constructed, equipped, and staffed. From these and many smaller stations the community is served.

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War has changed health department practices in Los Angeles County. Emergency protective services have been organized to meet the impact of attacks which the enemy is certain to use every effort to deliver. But more important, because of direct aid to the war effort, industrial hygiene, venereal disease control, tuberculosis control, nutrition, and other services have been emphasized.

EMERGENCY MEDICAL SERVICES

The long-range conservation programs developed by our local defense councils before the attack on Pearl Harbor were with this new phase of war placed in the background, and emergency protective services were given major consideration.

The health officers of Los Angeles City and Los Angeles County were named chiefs of emergency medical services in their respective jurisdictions. A joint medical advisory council with representation from medical, dental and nursing associations, hospitals, the Board of Education and the Red Cross was formed. Regular meetings are held for the purpose of coördinating procedure. Throughout the county approximately 200 casualty stations were set up by the Red Cross Chapters working with the chiefs of the emergency medical services. These were coördinated with the available community hospital facilities organized under a hospital committee.

The Los Angeles County Health Department has assigned to the emergency medical service on a full-time basis one trained district health officer as assistant chief of emergency medical service, one administrative assistant as procurement officer, and eight sanitary inspectors as field representatives. Two stenographers and two clerks complete the full-time personnel.

The health officer and other members of the department give various proportions of their time to the service. For instance, a carefully planned decontamination program is being organized under the direction of the chief of the bureau of preventable diseases. This officer has worked out an authoritative outline of procedures for decontamination of persons. He has organized a course of instruction for the dentists of the community who have accepted the responsibility for leadership in this program. He has consulted with the senior gas officer in working out plans for decontamination units adapted to climatic conditions in this area.

The chiefs of the emergency medical services in our county working with the joint medical advisory council have carefully studied the available records of the experiences in those areas in Europe which have been subject to air attack. We have related these experiences to our community and have built a program which we believe will give the best protection possible when the need arises. This county with an area of over 4,000 square miles is larger than some states. Yet nearly all of its larger hospitals are located within a radius of 5 miles near the center of Los Angeles City. Each of the 45 cities has complete autonomy under charter and law. The Office of Civilian Defense in its plan of organization of local defense councils has recognized this autonomy, with the result that in our county there are 45 separate defense councils.

Because of the great distances of many of the target areas from hospitals, and because many of the smaller cities do not have hospitals equipped to care for air raid casualties, we have felt it necessary to organize self contained casualty stations equipped and manned by a staff of physicians, nurses, and first aid workers who live near these stations and who are assigned primarily to these stations rather than to hospitals. In the event of raids, casualties will be given primary care by field teams dispatched from casualty stations and sent to those hospitals having proper facilities and most accessible to the areas involved.

EMERGENCY SANITATION SERVICES

Los Angeles County has more than 400 public water systems. A working committee appointed by the defense councils, including representatives of the companies and the health departments, has developed schools for information on the preparation and use of emergency chlorinating equipment and on emergency operation. Thirty-seven emergency chlorinators have been purchased by water companies and health departments and are available for use where needed.

Mutual aid agreements between companies, both municipal and private, have been carefully worked out. Commanding officers of army units stationed in county health department territory rely on the water division of the department to recommend safe water supplies and to check routinely the water used by the various units.

The milk industry and the health departments through a representative emergency milk committee, early in December, 1941, circulated a questionnaire among all milk plants in the county. This provided information concerning the capacity operation, current operation, and the equipment available in each plant. Details concerning refrigeration, source of light, power and water supply are also tabulated. There is a complete list of all transport equipment, including delivery trucks of all types. The committee has secured a list of managers and alternates of each plant who may be reached when an emergency calls for the utilization of plant facilities. With the information available it will be possible in the event of the destruction or damage of one or more plants to divert the milk to others still able to function.

The committee has also compiled and disseminated plant protection information, and has fostered an effective plant protection program throughout the industry.

EMERGENCY HOUSING

War industries have increased the population of Los Angeles County by several hundred thousand. This has greatly taxed the available housing facilities. Federal housing projects administered through the Los Angeles City, Los Angeles County, and Federal Housing Authorities have provided during the past two years approximately 13,000 units. Private housing has made available approximately 57,000 additional units during the same period. The need, however, is far from met.

With the shortage of living space in the areas surrounding the large plants it has been necessary for some workers to travel great distances from home to plant. The average for the workers of one large plant a few months ago was 20 miles. The desirability of living near the plants has resulted in a tendency toward overcrowding in these areas. The State Housing Act and the County Sanitary Code have made it possible for the housing division of the department to prevent serious overcrowding and to maintain a reasonable standard of sanitation. It is unfortunately true, however, that thousands of the older houses, many of which are now occupied, do not approach the standards set by the Committee on the Hygiene of Housing, especially with regard to physiological and psychological needs.

With the approach of gas and rubber rationing, and considering the inadequacy of public transportation systems, the situation will become increasingly acute, and our health departments will find it increasingly difficult to maintain standards compatible with healthful living conditions.

INDUSTRIAL HYGIENE

Long before the attack on Pearl Harbor, tremendous industrial development demanded an effective industrial hygiene service. This activity of the department was born during wartime

and has been geared to fit the present needs of industry. Industrial plants in California, as in some other states, are inspected by several governmental agencies. Some of these agencies concern themselves with health hazards in industry, such as those resulting from the presence of toxic dusts, gases, vapors, and fumes.

One important facility has been lacking, namely, the resources of special equipment and trained men to make the highly technical studies necessary for actual evaluation of these hazards and provision of effective control measures. We have made good this shortage without introducing an additional inspection agency into the picture.

That this rather radical policy on the part of a public health department is workable is indicated by the fact that, within the short year during which our facilities have been in existence, we have been hard pressed to keep up with the demands. We find ourselves, therefore, in the unusual rôle of rendering scientific consulting service to such agencies as the State Industrial Accident Commission, insurance companies, plant management, and industrial physicians.

Two tremendous dividends of such a program are that no time is lost in looking for work, and, since the service is earnestly requested in the first place, the recommendations in which our studies culminate are carefully considered and used as a basis in the design of control measures.

COMMUNICABLE DISEASES

The control of acute communicable diseases has thus far presented no special problems. We have not as yet inaugurated or planned a routine typhoid immunization program, although there are those who advocate such a measure. Diphtheria and smallpox immunization were increased greatly over the preceding year.

Tuberculosis control is receiving special emphasis because of the prospects of a long war with a consequent lowering of the economic status and a resultant increase in this disease. The tuberculosis associations of the county are strongly fostering case finding in industry. They have recently purchased on a coöperative basis a mobile 4 x 5 stereo photoroentgen unit which, when delivered, will be used exclusively for this purpose. Already the employees of several industrial plants have been checked with standard size film. One large aircraft factory is now, through its medical department, routinely x-raying all new employees, and another plant has a photoroentgen unit on order.

The health department, in addition to its regular case finding program, is making house-to-house surveys in low income areas. These surveys are at present the most fruitful source of new cases. Ten thousand x-rays uncovered 59 new active cases—almost 0.6 per cent—during the fiscal year 1941–1942. This work has been done largely with the photoroentgen units operated by the health department in its regular program.

Syphilis and gonorrhea control measures have also been emphasized. During the past year an increase of 36 per cent of new patients visited the department's 2,000 clinic sessions for diagnosis and treatment. An important increment to the venereal disease case load has been selective service registrants who are referred to us by the selective service boards through the State Board of Health, because of serologic tests for syphilis. We have thus far examined more than 1,100 such referrals. Each case receives a thorough study, which includes spinal fluid examination and cardiovascular x-rays. The clinical status of the selectee is thus determined, and many of these men are being rehabilitated for military duty. Familial and other contacts are examined.

Prostitution has been rigorously repressed by the law enforcement agencies

and an arrangement has been worked out so that all women arrested on morals charges and who are brought to the Los Angeles County Jail are placed under legal quarantine. These suspects are held—against bail—until blood tests, smears and cultures may be made. If venereal disease is found in an infectious stage, isolation is extended.

Since the task of venereal disease control in wartime is so vital a responsibility, it has been necessary to expand this service. Substantial assistance has been provided through federal funds. We are now preparing to embark upon a campaign of social hygiene education to be integrated with a general health education program and directed primarily toward workers in our local armament plants. More than 350,000 people are now employed in these plants in Los Angeles County. Most of these workers are young men and women who have never before received the bonanza wages of expanding industrialization. We feel that we have a responsibility to give to these workers the best health information available. Both management and labor have been included in the plans and have given wholehearted coöperation.

CHILD CARE

An important recent community development was the "Conference on Childhood and Youth in Wartime." This was planned by the Council of Social Agencies and jointly sponsored by the defense councils, the Board of Education and the coördinating council. The purpose was to focus attention on the importance of continuing support of public and private child and youth service agencies during the emergency. The meetings of the recent two day conference were crowded with enthusiastic participants. Problems relating to health, welfare, delinquency, work, the school, and a future program were seriously discussed by local and national experts in the field. The opening luncheon and closing dinner sessions were attended by a 2,000 capacity crowd and many were turned away. The theater used for the general sessions was filled, and hundreds were forced to listen to proceedings by loud speaker in an adjoining hall. A series of carefully thought-out recommendations to improve the community health and welfare facilities for children was unanimously passed at the closing session, and a follow-up committee was commissioned to activate this Los Angeles Children's Charter. Already a health education program sponsored by the Council of Social Agencies and participated in by every health agency is being planned.

NUTRITION

The health officers of Los Angeles County and Los Angeles City have led in a county-wide nutrition program. During the past year almost 200 group leaders have received technical instruction. This fall these leaders are conducting nutrition discussion groups under the auspices of parent-teacher associations, schools and other groups, using standard materials made available to them. The Los Angeles Chapter of the American Red Cross, with excellent leadership, has alone given nutrition courses to over 18,000 women.

The committee sponsored a "lunch box derby" which was organized and arranged by the leading house furnishings establishments of Los Angeles. As a result of good publicity superimposed on timely interest, thousands of women inspected lunches prepared by various commercial organizations. These lunches were judged by nutritionists as to food value. The news releases following the exhibit gave scientific information of general interest on how a good lunch should be prepared. The large metropolitan newspapers are keeping this interest alive by frequent special articles and layouts.

Health workers now have the greatest opportunity for service to our country and our fellow men that has ever faced us. Let us not fail to attack our problem courageously; let us not be swayed by personal or organizational considerations; but may we place every energy and facility at our command where it will serve most effectively, to the end that this struggle upon which depends the survival of our civilization may be rapidly and successfully concluded.

The Resurvey of Graduate Nurses

A NATION-WIDE survey of graduate registered nurses is being undertaken January 1, 1943, by the U. S. Public Health Service at the request of the Subcommittee on Nursing of the Office of Defense Health and Welfare Services. Every effort will be made to obtain an accurate and complete record of the available nurse power of the country.

The questionnaire being sent to nurses for the survey carries a statement by Paul V. McNutt, Chairman of the War Manpower Commission to the effect that, "The nursing shortage is urgent, both at home and on the fighting fronts. Today there is only one place for the graduate registered nurse to be—that is, on active nursing duty.

"That means all nurses. Whether married or single, whether eligible for service with the armed forces or retired, there is a place for every nurse. Lives may depend upon how quickly you respond to this call."

Return post cards have been provided by the U. S. Public Health Service and will be distributed in the states by the State Agent for the Inventory, appointed for this purpose. Local Nursing Councils for War Service and District Nursing Associations will coöperate in locating graduate nurses in their communities. The completed questionnaires will be retained in local areas, tabulations of data being sent to the State Agents, who, in turn, will send a complete tabulation for the state as a whole to the U. S. Public Health Service in Washington, D. C.

The nation is facing a critical nursing shortage due to the needs of the armed services, the inequitable distribution of available nurse power, and to expanding the requirements of industry, public health, and hospital services.

The survey being undertaken should contribute markedly to the solution of some of these problems. It will enable the Nursing Councils for War Service to analyze their resources and needs, to locate nurses available for military service, to determine which nurses are holding strategic positions essential to the war effort, to plan for the part-time use of married nurses, to secure volunteers for emergency medical services or for Red Cross classes, and to relieve some of the inequalities in distribution. Nationally, it will provide a picture of the country's nursing resources which should form a basis for an estimate of the number of student nurses needed, the number and type of auxiliary workers to be prepared, and the ratio of nurses to population available, when distribution plans may be effectuated.

It is essential that every graduate nurse, married or single, active or inactive, fill out a survey and return it to her State Agent at once. Nurses who have not received a card may secure one from the state Nursing Council for War Service or the State Nurse's Association.

War and the Health Department*

C. In an Eastern City

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CATASTROPHES of any kind, be they war, flood, epidemic, hurricane, or any other disturbance of the elements, have always dramatically and sometimes painfully, demonstrated that a well organized official health agency is of inestimable value to a community. Such events frequently accomplish what no survey has been able to do—the laying bare of unrecognized strengths or weaknesses, as the case may be. Each community might well ask itself even at this late date, "Do we have adequate health protection?" Perhaps the question has already been partially answered. The ensuing weeks, months, and years of this present world struggle will further clarify our positions.

It is realized that no two health units are the same, that they are not confronted with identical problems, and that they do not have the same resources with which to meet them. It is further realized that different sections of the country have radically different political backgrounds and patterns. The remarks that I shall make are strongly colored by the conditions, institutions and political makeup existent in the New England States from which I come.

There is one thing, however, common to us all and that is that our organizations are being tremendously influenced by the war effort and that we are in turn trying our best to influence that war effort.

We are being disrupted and it is not comfortable. If we have been complacent, we can no longer endure that state. Whether this disruption leads downward or upward will depend largely, I hope, on the effort we make to guide that disruption.

The administrator of a full-time professional health department is confronted with numerous problems, particularly if he is placed in an industrial area, and practically all of New England represents heavily industrialized communities. In the first place he is dealing with a new population both in numbers, background, and age distribution, and one that is continually shifting. The influx is largely made up of young industrial workers, many from rural areas, so that the immune/non-immune ratio established over a period of years is disturbed. Secondly, official population figures are not available so that calculated rates are always higher than the actual ones.

Furthermore, the community health facilities were not planned for such increased numbers, and in many instances even the small scheduled expansion of existing services is made impossible by decreasing personnel and priority regulations. Making extra provisions to cope with the extra, the unexpected and the unplanned for wartime expansion appears to be entirely remote.

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Take such a community and place it in housing that is inadequate in quantity both old and new; attempt to feed a large portion of it in public eating establishments manned by transient, inexperienced, and insufficient food handlers; entertain it through the many off-shifts of industry on a twenty-four hour basis with the old facilities; service it by the changing personnel of public service agencies; and the inevitable result is the magnification and multiplication of old problems.

In addition the difficulties encountered in attempting to maintain the sanitary conditions when the owner is held down by the Office of Price Administration and is reluctant to make improvements, and when the disgusted tenant is unable to vent his spleen by moving elsewhere because there is no elsewhere, add the finishing touches to a very difficult situation.

This brief picture of a community mobilized in an urban center for total war effort can be seen anywhere on the eastern coast, and undoubtedly throughout the land.

There is an old medical saw that says, "Once the diagnosis has been made, the treatment is easy." The diagnosis of many of our social ills has been established, and new ones are being made daily, but the treatment is not easy. The case is far from hopeless, however, and this consideration leads us to ask, "How are health departments meeting the present demands made upon them by their ailing communities?"

In the first place, they are budgeting their time and rationing their services. In the second place, they are devising new ways of doing old jobs, just as industry is finding new ways and new processes to turn out old products. In places where specialized inspectors were overlapping territory with other specialized inspectors from the same office, generalized health inspection service is being set up. This means greater in-service training, not some day, but now. The program being polished up for a launching some day must be put into action today.

Where nursing service was largely on a home visiting basis with a good deal of individual teaching, group conferences are being set up to conserve nurse hours by bringing the people to the nurse. Where immunization promotion was carried on in special groups through purely educational methods, the more rapid direct demonstration method is being employed.

Duties performed and responsibilities held by the heads of bureaus are being delegated to other members of the organization. Programs with long-range objectives, but with insufficient immediate return, like certain tuberculin testing programs, are being dropped for the duration. Other programs, where evidence was accumulating that they had little mass value, such as Schick testing in the younger age groups, are also being dropped. New office procedures are being developed with greater use of punch card mechanics.

In this connection it is frequently possible to double up with some other governmental agency and make use of partially idle equipment. Especially is such reorganization of office procedure imperative in the bureaus of vital statistics where demands for copies of vital records have bounded to unthought of heights. The unnecessary tabulation and filing of a lot of non-pertinent material against the day when it may possibly be used for some nebulous study that was conceived thirty years ago and has now become not only hazy, but actually fog-bound, has suddenly ceased. Such reorganization of the health department activities is basic to any contribution to the production front.

There are, however, other ways beside improving our regular routine duties in which health departments can be of service. In this connection it is an op-

portune time in which to examine our relationship to the community at large in which we work.

We have come to subscribe to the tenet that the health department should be the natural leader of the community in the field of health. In war this has special significance. Merely saying so, however, does not make it so. Leadership demands first an understanding of all health problems in any community, and, secondly, a desire to know as far as possible what every other agency is contributing to the entire picture. To do this the health department personnel must identify itself *with* and show a real interest *in* every community health enterprise.

No longer can we sit behind our administrative desks cloaked with the authority and prestige that has come to us out of the past. The demands of *today* are not those of yesterday, whether it be in the field of restaurant sanitation or medical rationing. If we have not been consulted about a new community health problem, it may possibly be due to lack of appreciation by the other fellow for the importance of our position, but more likely it is due to the fact that we have not been too helpful in some previous situation, and have lost face.

Community health planning in its broader sense, whether it be a rehabilitation program in a struggling private agency, the need for federal funds for additional beds in the local hospital, whether it be an open sewer near a temporary housing project, the need for day nurseries for war working mothers, a feeding program in a settlement house, funds for the training of nurses and physiotherapists in the Kenny treatment, war programs for the medical society meetings—all have bearing on the health of our communities, and the health department should be actively helpful whenever it can.

Many private agencies with well established programs have felt it necessary to make revisions in their activities in order to gear their efforts most effectively to the national war needs. Many can be influenced to contribute to the health program. The close contact that exists between the health department and the people means ability to interpret community health needs into such agency planning.

Basic to community health planning is a complete picture of local health resources. In times of peace there may be a certain amount of competitive spirit in the field of health and medical service which falls away in war time and cooperative use of many facilities is much more easily consummated. We need now more than ever a detailed listing of what health facilities the community has to offer.

If this is done, we shall all undoubtedly realize that we were not making the maximum use of our available services, that not enough persons were aware of the existence of these facilities. Several communities have pooled such detailed information of many agencies so that all concerned had a complete picture of such services.

The public is more health-minded at the present time than ever before in our generation. Publicity of the results of Selective Service examination, the national nutrition program, more widespread preëmployment health examinations, mass health surveys, Workmen's Compensation legislation, publicity of the National Infantile Paralysis Foundation, and many others have made health a news item.

The daily increasing number of articles in magazines and newspapers on health is a token of that change. The people are prepared to make greater provisions for public health—now in time of national emergency it may be possible to overcome public apathy in regard to the need for complete protection of its milk supply; now is the time to get the public clinics out of town hall

basements or other dark and dingy quarters and improve the quality of treatment rendered to the medically indigent; now is the time to improve the sanitary quality of our public water supply when a "break" may mean a calamitous breakdown in production.

The public is most sensitive to the war-associated problems involved in syphilis and tuberculosis. They know that a nation in arms has always experienced increases in these two diseases. We are anxious to increase and expand our control efforts in these two fields and the public expects it.

In tuberculosis the small film, the 8" x 10" or the 35 mm. makes possible greater case finding programs by mass x-raying of the now gradually disappearing lower economic group, and groups where high incidence of the disease occurs.

In syphilis control more and more persons can find their way to treatment with the private physicians. This calls for perfecting and extending our activities into the doctor's office so that we can hold the patient there and carry on the same control program with the cooperation of each practising physician treating the disease. This program is more difficult and calls for maximum tact and perseverance on the part of the field worker. A real bilateral relationship between doctor and health department must be developed if the control of syphilis is to reach the heights demanded by our disorganized social life.

The establishment of the Office of Civilian Defense with its state and local defense councils has brought the health department new contacts with old and new agencies. The office of Civilian Defense has taken it for granted that health departments would assume responsibility for its classic fields—water supplies, sanitation, communicable diseases. On the other hand, in the organization of large groups of volunteers for the various services, the health departments have been extremely helpful in aiding to lay the groundwork for such organization by contributing what information they had in making population studies, in zoning the cities, and in some instances developing the entire program of emergency medical services in coöperation with hospitals, medical societies, and volunteer groups.

Wherever this has been done, the planning of services has in most instances been more closely tailored to the needs of the community, and has taken into consideration the peculiarities of each municipality. Here there has been an opportunity for the health department to point the way for amicable and harmonious coöperative planning and action of the American Red Cross, the Office of Civilian Defense, social welfare groups, and official governmental agencies. It has benefited the taxpayer too in that under the pressure of the Pearl Harbor aftermath, unnecessary expenditures were kept to a minimum, and every attempt was made to utilize existing facilities and equipment. Under the general leadership of local defense councils, it has been possible to assist hospitals in developing and recruiting emergency hospital auxiliaries, as well as to stimulate and help in the planning for hospital evacuation.

We can also profit from the services of some of the Office of Civilian Defense activities. I need merely mention that air raid wardens are in a position to give us sorely needed assistance in making an up-to-date census of our rapidly shifting populations. The necessity of having more accurate figures on which to compute rates for our vital phenomena is a real one.

A particular concern of health departments is the need for coördination of programs and activities of one political subdivision with contiguous ones. This need is already very apparent and has assumed greater urgency because of the war activity. This is particularly

true where full-time health services are in operation in one city or town and part-time service in another, or where there are smaller units, all of which operate under a part-time health department system. Where large industries are operating and drawing the large part of population from many dissimilarly health-serviced towns into their plants, we have population aggregates enjoying excellent health protection for eight hours of each day, and poor or mediocre health service during the remaining sixteen hours. It would appear that the establishment of district health divisions, explored in times of peace, is far more urgent as a result of the many population cross currents resulting from the war effort.

Under this arrangement adequate health protection for the migrant and suburban industrial worker would approach reality. The grouping of such district health services on the basis of shopping centers should not present too great difficulties since the need for them already existed, and now has become more than evident.

Never before has it been so necessary for us continually to evaluate our position and analyze what we are doing in the light of constantly changing conditions. We must be ready as never before to keep our programs fluid enough so that they can meet new and unexpected needs as they arise—alert also to detect the beginnings of the post-war problems so that prevention, the essence of all public health philosophy, may be the first step in the reconstruction period.

Basic Criteria for Qualified Leadership in the Environmental Sanitation Program*

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ALTHOUGH public health activities have expanded in many directions in recent years, embracing new and helpful developments as science progressed, sanitation continues to be one of the basic functions of the health program. In fact, one of the outstanding contributions of all times to mankind's security and comfort has been the environmental control of disease which the application of scientific sanitary principles has made possible. Looking back over the years of successive achievements in this field, we feel a surge of pride. However, during this evolutionary period, it must be admitted that we have had our shortcomings too, and in spite of our successes certain deficiencies have cropped up from time to time in the sanitation program which curtailed its effectiveness. It seems fitting, therefore, that we pause long enough to take stock of present-day objectives and organization with a view to determining how we might best achieve the desired goals of today's environmental sanitation program.

The type of organization through which we must work is a vital consideration. No matter how minor or routine actual sanitation activities may be, it is apparent that their conception and general guidance require both medical and engineering ability of a high order. To execute efficiently the numerous duties for which he is primarily responsible, the public health engineer must possess certain basic qualifications. Likewise, definite principles of administration must be developed if the sanitation program is to function properly. The health officer's recognition of these facts, together with his full coöperation in formulating policies to achieve the ends desired, is one of the basic criteria for qualified leadership.

It appears that the basic criteria for qualified leadership in the environmental sanitation program resolve themselves into four fundamental elements:

1. Basic training and experience of the public health engineering personnel.
2. A clear understanding of the nature and scope of public health engineering by those charged with administering any part of the sanitation program.
3. Proper training and coördination of all personnel engaged in the environmental sanitation program.
4. A clear understanding by public health administrators of the function of the public health engineer with respect to administration and supervision of the sanitation program. Much confusion now existing in both the administration and performance of the local sanitation program could be eliminated if a proper realization of professional supervision could be established.[4]

As to basic training, the Committee on Professional Education of the American Public Health Association, in a

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report approved by the Governing Council October 5, 1937, pointed out that the engineer who adopts public health as a career should have general educational qualifications somewhat comparable to those of a physician entering the public health field. The importance of the qualifications which the committee outlined needs reëmphasizing, in view of the fact that no leadership can be attained in the sanitation program unless its various functions are delegated to individuals thoroughly competent to carry them out. Not only must the administrative personnel be well educated and trained in the principles of public health engineering but it must be able to direct and supervise the activities of sub-professional personnel which most health departments find it necessary to employ in the interest of economy. To give assignments to these workers calling for engineering knowledge and experience they do not possess would certainly jeopardize the quality of leadership desired for an effective program. However, much can be added to the program if care is taken to allocate to those individuals duties commensurate with their ability, and if opportunities are given them for field experience under supervision. Leadership depends upon the proper utilization of supplementary workers and also upon auxiliary or outside agencies, with careful coördination of all activities into the entire sanitation program.

In view of the responsibility of the administrative personnel, it seems worth while to repeat here the subjects which the Committee on Professional Education of the American Public Health Association outlined as an essential part of the educational equipment of the public health engineer in addition to his purely engineering studies. They are:

1. *Biostatistics* sufficient to give a sound conception of the mass phenomena of disease, familiarity with methods of collecting, recording, and studying statistics on vital phenomena, and ability to interpret the results of the analysis of such material.

2. General or theoretical *epidemiology*, including instruction in the collection, recording, analysis, and interpretation of epidemiological information regarding those diseases toward the prevention and control of which the public health engineer would be expected to contribute.

3. General *historical background of health administration* and a general knowledge of the organization and functions of the national, state, and local administrative units.

4. Fundamentals of common *law*.

5. *Sanitary biology* and instruction in *interpretation of laboratory reports* and methods of administration and operation of laboratories in connection with public health work.

6. *Food technology*, with particular reference to production and pasteurization of milk, and familiarity with methods of protection against such diseases as may be transmitted by foods.

7. *Entomology* as it applies to those insects which may be vectors in disease transmission and in methods of their control.

8. *Housing* with respect to health.

9. *Lighting*, *ventilation*, and *plumbing*, sufficient to give some knowledge of these subjects.

10. *Industrial sanitation*, particularly with reference to certain hazards, the correction of which is largely an engineering problem.

11. *Environmental sanitation* as it applies to rural areas and to recreational facilities.

With fundamental training in engineering in addition to a comprehensive knowledge of the subjects enumerated the public health engineer is prepared to make accurate analyses of environmental health problems and to work out effective methods of control; that is, of course, if with all his professional education he has developed a mind which is trained to meet individual problems in an original manner. No amount of knowledge gained can be considered an asset to the sanitation program if it is not forthcoming when needed or if it is not properly applied. Leadership calls for initiative and clear-cut objectives.

As one reflects upon the close relationship of the activities of the public health engineer to other units of the health organization, it becomes obvious

that there must be the best of supervision and direction from the central offices in order best to coördinate the activities of all health workers and to make for a unified program. This, as pointed out before, calls for a close working relationship on the part of the health officer and public health engineer, with a complete understanding on the part of both officials as to policies and methods to be pursued in solving the various problems which arise.

In the Report of the Committee on Coördination of Public Health Engineering Activities,[2] in 1940, an attempt has been made to define more clearly the proper functions of public health engineers and other personnel in environmental sanitation, and to suggest methods for more effective coördination and supervision of activities. Under a section entitled, "Administration and Supervision," it is recommended that:

1. All public health engineering activities should be under the supervision of a competent public health engineer who should be directly responsible to the administrative health officer for all matters which affect their professional integrity.

2. The extent to which particular activities should be performed by technicians or other supplementary personnel and the details of administrative arrangement to provide for engineering supervision will depend upon the nature of the problem, the feasibility of specifying definite procedures, and the capabilities of individual workers.

3. The administration of state and local health departments should provide for consultation and interchanges of service and information so as to maintain coördination of the work of public health engineering divisions and of other administrative units.

Commenting upon this subject further, the report concluded:

In order to provide for effective supervision of all aspects of environmental sanitation, certain major administrative functions must be delegated by health officers to their directors of public health engineering divisions. Obviously these should include alministration of the division office and the approval of standards and technics. Also they should include technical planning and supervision of ali types of sanitation work, and appraisal of the qualifications, training facilities, and procedures of sanitation personnel. The assistance and influence of public health engineers should be further extended and utilized by consultations and joint services with other divisions. In this way the engineering aspects of the entire public health program can be adequately supervised without confusion or overlapping of administrative responsibility.

Without doubt, qualified leadership in the environmental sanitation program depends upon both technical ability and initiative in applying this ability in an effective manner. Public confidence, which can contribute tremendously to leadership, is often inspired by the manner in which local activities are carried out and by the attitudes and competency of those carrying on these activities. Consequently, it seems of the utmost importance that all workers manifest a spirit of appreciation for the objectives of the program and that they approach their particular assignments in a manner which will reflect credit upon their own efficiency and that of the health department.

The enforcement of the police power necessary to carry out the protective sanitary regulations is one item which calls for discretion and tactful handling. The worker who is wise will be able to cope with most cases with little or no friction. He will encounter difficulties from time to time, no doubt; especially if he has an apathetic public to deal with or runs into obstacles imposed by local political machinations. However, in most instances, he will be able to dispose of these matters without conflict, depending largely upon the policy and personnel of the local health department and upon some measure of individual ingenuity, common sense, and a knowledge of human relations. As a result of handling difficult situations competently, leadership in the sanitation program will be further strengthened.

There is no doubt but that the efficiency of the entire health program is judged in large measure by the quality of work performed by the public health engineering personnel, due to the intimate contact these individuals have with the general public. Therefore, at a time when so much depends upon the thoroughness of planning and carrying out of well rounded health programs, more attention than ever should be given the basic criteria for leadership in the environmental sanitation program.

While public health has reached a high state of achievement in recent years we have hardly begun to put to work the full knowledge which could liberate man further from the primitive and elementary bonds of ignorance, superstition, and disease. Think of what could be accomplished if all the defects of the physical community could be corrected! We are constantly urging as a preventive measure that individuals submit periodically to their physicians for a check-up and get all remediable defects corrected. Is it not just as important to subject the total physical surroundings to the same sort of rigid check-up by those expert in diagnosis in this field and possessing adequate knowledge to cope with the problems presented? The public health engineer's position in this respect parallels that of the physician. Of what avail is it to see the physician several times a year if each time the individual goes back home to an environment which is a hazard to health?

As we survey conditions all around us, it is realized that there is yet a considerable job to be done—one that calls for teamwork and careful planning. Public health has met the challenges of the past and I am sure that those of us responsible for its functions today are eager and willing to put our shoulders to the wheel and to work unceasingly until we have achieved the goals we know are within reach.

"To live in health, to be free in spirit, and to pursue happiness through fellowship—these were and remain the objectives of American democracy. These are the values which now have been brought to the crucial test."[3] With the improved equipment and advanced knowledge we have at our disposal today, I sincerely feel that public health will not be found lacking in the worth while accomplishments of this period or in meeting the demands of the future.

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Responsibility of Local Health Authorities in the War Emergency*

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THE subject assigned to me for discussion, namely, "The Responsibility of Local Health Authorities in the War Emergency," carries with it the implication that all areas in the United States are served by some form of local health organization capable of accepting responsibility and exercising authority. According to this interpretation, it is assumed that full-fledged staffs of local public health workers wait only to be told what to do before springing into action.

This, I am sorry to say, is far from a true picture of the situation. In spite of considerable progress in recent years, no such comprehensive network of local health services exists. In extensive areas of the United States the exercise of local health functions is vested in political jurisdictions such as townships, boroughs, villages, and, in some instances, counties, in which the population consists of from a few hundred to a few thousand inhabitants. Such local subdivisions are in most instances nothing more than geographical fictions designed to fulfil the political requirements of the horse-and-buggy era. They bear no relationship to present community life, nor do they in any sense contain institutions or administrative units which meet the economic and social needs of the population. Like the human vermiform appendix, evolution has rendered them obsolete and functionally sterile.

In such vestigial jurisdictions legal health authority is often exercised by a person who devotes only a small part of his time to health functions. He may hold his position as health officer solely by virtue of the fact that he was elected town clerk or marshall, or he may have been appointed to the job. In either case his tenure of the position is based on no qualifications beyond his ability to secure and hold office. I have had occasion to make administrative surveys of such local governmental units and to tabulate the basic occupations of those charged with the fulfillment of health duties. It was astonishing to find what a wide range of human pursuits was covered—represented were farmers, undertakers, storekeepers, railroad employees, janitors, and barbers. Indeed, some of the incumbents were unable to place themselves in any occupational category, and naively listed themselves as "unemployed."

Obviously it is futile to attempt to discuss official responsibility or health program content in areas where health activities are in the hands of such inept types of organization. These organizations are not even keyed to meeting the needs of the community in normal times, and cannot be expected to function any better during a crisis. It is important that we recognize this basic deficiency before passing important responsibilities on to such agencies with no more than a wave of the hand.

The political map of this country, in

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so far as rural jurisdictions are concerned, was made for the most part by surveyors who thought in terms of rectangles and plotted the land before it was inhabited or developed. In settling the country, however, people were motivated by economic and social factors rather than by geometry. They chose to make their homes in places where the topography, soil, and material resources were suited to the gaining of a livelihood, and as a result community outlines developed which bore little or no relationship to political boundaries. As more speedy and convenient methods of transportation were perfected, the disparity between the social and the political unit became even more pronounced. Nevertheless, in many instances the public services designed to meet the people's needs continued to be administered within the arbitrarily imposed and outdated political framework.

The obvious remedy is to extend the jurisdictional limits of the administrative unit so that they will conform in general with the boundaries of the community to be served. When so extended the health organization has a rational basis for existence and a theater of operation in which it can be expected to achieve tangible results. Of course, certain difficulties are sure to be encountered in bringing about such changes, but they are by no means insuperable. There is nothing novel or revolutionary about such rearrangements; they have been resorted to time and time again in the course of our national development. The township, once the unit of all local government, is today nothing more than a symbol of local autonomy. As circumstances warranted, its functions passed into the hands of the counties or larger jurisdictions. Maintenance of the highways was once a duty of the local road district, but with the advent of the automobile the responsibility passed to the county, only to be assumed later by the state. Likewise, districts were formed for the administration of water supplies, sewerage systems, educational facilities, mosquito control, and other functions which could not be carried out effectively by existing official units. It has also been demonstrated that boundaries can be altered and political entities regrouped when such an expedient serves political ends. Even the founding fathers of our Republic were adept in this practice, and as long ago as 1812 the word "gerrymandering" was coined to describe it.

Local public health agencies have lagged behind other branches of public service in adjusting their organizational structure to suit changing social conditions. It is now a question of determining how to accelerate the natural process of adaptation in order to meet an emergency situation.

The American Public Health Association, through its Committee on Administrative Practice, has recently formulated a provisional set of basic criteria for local health services. In its report the committee states that all population units or areas in the United States should be served by local health units which are directed by full-time medical health officers. In general such local units should serve a population of not less than 50,000 and not more than 250,000, except where one or more counties constitute a single health jurisdiction in a metropolitan region. The area served by one unit should not extend more than 40 miles in any direction from the headquarters office. The units so conceived may be single-county units, multiple-county units, or district units including a part but not all of one or more counties. The committee recommends that cities located within a county be served by an inclusive type of county or district health unit.

The report assumes that most services of a clinical nature will be performed by part-time medical personnel drawn from the local practising profession. It also

states that a unit should have not less than 1 nurse for each 5,000 of population; 1 sanitarian for each 25,000 to 35,000 population, with at least 1 member of the sanitation staff of engineer grade if the population is 50,000 or more; and a sufficient clerical force to keep records and leave the technical staff free for professional work.

The objection may be made that redrawing the health map on the basis of such principles is a highly theoretical procedure. This, however, is not so. Today, we cannot deny the immediate and practical value of any thoughtfully conceived effort to put on a rational basis the distribution of our nation's health services. The war has brought about a tremendous disruption in community life in hundreds of localities throughout the country. Health problems have been multiplied and magnified, whereas our resources for dealing with these problems have diminished. Shortages of many kinds of essential materials, and above all of personnel, are already crippling the inadequate services hitherto maintained. At the same time, all available evidence points to a long war and to a depletion of man power and materials which will make our present plight seem enviable by comparison. Rationing of several kinds of civilian commodities has already been put into effect, and restrictions will soon be placed on many more. There can be no doubt that a redistribution of health services will also be necessary.

The U. S. Public Health Service is now receiving a steadily increasing number of requests, under its grants-in-aid program, for financial assistance in the support of incomplete health units. A unit which has been operating under the direction of a full-time medical officer loses that officer to the military forces, and a request is made that the unit be allowed to continue without a full-time medical director. Obviously, this is not a feasible solution if a satisfactory standard of service is to be maintained. Instead of attempting to operate in a headless manner, such a unit should pool its resources with a neighboring unit which has a medical health officer. In this way it can continue to operate under the competent direction which is necessary to produce desired results.

What I have said concerning the necessity for complete coverage of the country by full-time, professionally staffed health units may arouse some misgivings in those who advocate state administration of local health services. Considerable difference of opinion exists with regard to the relative merits of centralized vs. local direction. This, however, is not the subject I am discussing. I recognize that there are circumstances of time, place, and type of service which bring out the advantages of one plan as contrasted with the other. The point I wish to make is that, regardless of where ultimate authority lies, it is chiefly at the community level that the service must be performed. And, as I said before, by a community I do not mean a village or an artificially established political unit. Almost all sections of the country today are tributary to some population center which satisfies a majority of the inhabitants' needs. To such centers people go for education, recreation, the purchase and exchange of commodities, and, in the main, for medical treatment. They do not look to the crossroads village for satisfaction of these needs, nor do they depend upon the state capital.

It is in such recognized community centers that public health services must be established and maintained if they are to operate economically and efficiently. Whether the local health unit should have a high degree of autonomy or whether its activities should be directed by a central state authority is a matter of opinion or local tradition, and is perhaps relatively immaterial. What is important is that the health unit gear

its activities to the needs of the people, and that it provide an integrated set of services with a minimum of waste motion and expense. To do this there must be direct contact and community of interest between those who provide the service and those who benefit by it. When such conditions prevail the health unit is in a position to become a potent force in the community.

Despite an intricate mosaic of local jurisdictions, the administration of essential public health services in Pennsylvania is centralized to an unusually high degree. This system has some decided advantages. It is, for example, well adapted to overcome the Balkanization which frequently characterizes health services operated as locally autonomous units and supported principally by local taxation. This does not mean, however, that local health services can be operated successfully over a period of years by remote control through a corps of circuit riders who make occasional visits to the individual communities. Such persons have no roots in the community and cannot hope fully to understand or meet its needs. There is a tendency among health workers of this type to go into a locality more or less in the manner of traveling salesmen, each with his own stock-in-trade. In peddling their wares they often find themselves in direct competition with others from the central office who have their own stories to tell or their own lines of goods to sell.

Now that transportation has been drastically curtailed, the visits of these emissaries will necessarily be less frequent. The state health department's control will thus become even more remote, and the communities will have to depend to a greater degree upon local initiative and resources. I am sometimes inclined to believe that the curtailment of transportation resulting from the war may actually serve to enrich the content of public health programs. For some time, at least, our health circuit riders may be forced to remain static long enough to do a thorough job in one locality before moving on to the next.

Let us assume for purposes of discussion that a community possesses a health organization capable of carrying out a satisfactory program. What then should be the content of the program? The situation at this time calls for reemphasis upon those basic aspects of public health activity which engrossed the attention of our early health administrators—elementary sanitation and law enforcement. By this I mean the maintenance of ordinary communal cleanliness—a safe water supply, proper disposal of sewage and garbage, milk that is fit to drink and food that is fit to eat, restaurants that are conducive to appetite, absence of vermin, decent housing, and a safe and hygienic working environment. To those basic needs must be added the provision of medical care, a function which was originally a part of poor relief but which increasingly is being recognized as an essential part of a health program.

These basic activities—sanitation, law enforcement, and medical care—are today more or less taken for granted, as if they would take care of themselves. In recent years greater stress has been placed on certain less basic functions of an educational or promotional nature. These activities are not without considerable value, but there are some things which simply cannot be talked or educated away. One is filth and another is sickness. There is unmistakable evidence that simple sanitary services and general medical care—neither of which we have ever developed to a satisfactory degree—are now breaking down in many areas in the country. I believe that for the duration of the war the chief instruments in the health officers' armamentarium will once again have to be the shovel, the club, and the pill bag. A health conservation contest is not the way to approach the problems of a

population that has become lousy, nor will an educational campaign serve to remedy a water supply that is being polluted by an insanitary trailer camp. Fortunately, war and calamities in general have a way of emphasizing the elemental factors in human existence.

There are several reasons for the breakdowns which are now occurring. First, there is the dislocation of population to which I have already referred. Second, there is a scarcity of materials upon which we have come to depend for various types of sanitary devices and installations. There is likewise a growing labor shortage, and an acute lack of engineering personnel. With regard to the distribution of medical care, the situation is truly alarming in many communities. Doctors, dentists, and nurses have been withdrawn in large numbers from civilian service. At the same time, people once again have money to spend, and are seeking medical care which they could not afford prior to the war boom. Industrial hygiene and related medical service, largely neglected throughout our years of remarkable industrial development, have now taken on compelling significance because of the urgency of war production.

In addition to intensifying the need for action along traditional lines, the war has also brought to health departments some entirely new problems. Chief among these are the many-sided aspects of what is termed "civilian defense." This includes the organization of emergency medical and hospital services in preparation for possible enemy action, the establishment and maintenance of blood banks, and the protection of public water supplies against contamination or actual damage.

It is quite apparent that these increased duties—both old and new—cannot be discharged without readjustments in organization and methods. Ingenuity is demanded in many respects, but most important of all is the utilization of available personnel to the greatest possible advantage. This involves not only rationing of services, but redistribution of skilled workers. Professional personnel must be reassigned to localities and tasks in which their services are most needed. After suitable orientation training, auxiliary personnel should be utilized for the performance of many functions heretofore discharged by persons with special professional qualifications and training. Educational and training processes by which students are prepared for employment in medical, sanitation, and allied fields must be accelerated.

In turn, if existing staffs or obtainable personnel are to be employed most effectively, reorganization of many types of facilities and services is essential. Idle equipment must be put to use, and all resources pooled so that they will be of benefit to the largest possible number of people. Time- and labor-saving procedures must be adopted. The provision of medical care, for example, must whenever necessary be organized around clinics and hospitals. Increased attention must be given to methods of financing medical care for the individual so that care will be more readily available to a larger percentage of the population.

These emergency measures, however, cannot be effected except around some administrative unit with the legal authority and the technical ability to put them into practice. The health department is unquestionably the organization best suited for the assumption of this responsibility.

It is evident that some of these measures cannot be applied effectively without introducing the element of compulsion which is daily coming to play a greater part in our lives. Moreover, since some of the problems are statewide or even nation-wide in scope, local initiative and responsibility will not always suffice. Nevertheless, even though state or federal action may be needed,

the local organization must constitute the framework within which the program is implemented. Regardless of the agency responsible for the over-all planning, and regardless of whether the personnel employed are on the local, state, or federal pay roll, operation must be channeled through existing or improvised community facilities and must be related to the communities' needs.

A declaration of the American Public Health Association, adopted by its executive board in December, 1941, states:

> The effective modern health department, as now conceived and at present organized in many states, cities, and counties as a branch of civil government, comprises a medical, sanitary, and related biological and social competence which enjoys broad authority to meet a wide variety of medical and environmental emergencies. . . .
>
> . . . the health officer and his staff must be alert to extend, and, if necessary, to modify the usually accepted health functions to meet the multitude of exceptional situations certain to be created by the state of war and by the mobilization of all the people and their industry to support the armed forces.

This is a call for direct and vigorous action. It demands something more than reliance upon a process of evolution, which is a dignified term for the method known as "muddling through." This time, an attempt to muddle through will mean defeat.

The future pattern of health organization in this country depends largely upon how this challenge is met. If the basic system we have evolved slowly over a period of years proves adequate to the demands of the emergency, it will be retained as the foundation upon which the nation's future health services will be provided. If it fails, a reorganization, sweeping in character, appears to be inevitable.

Hypothetical Relationship of Water Supplies to Poliomyelitis*

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THE hypothesis that poliomyelitis may be water-borne is not a new one. It has received consideration by various investigators ever since the infectious nature of the disease was recognized a half-century ago. Up to 1937 the concept received little support. During the past five years it has recruited many advocates. It is proposed here to review very briefly the present status of the laboratory and epidemiological evidence upon which this hypothesis rests.

Fundamental to the problem of how poliomyelitis is transmitted is knowledge of how the virus enters and leaves the body. Laboratory experiments on monkeys and chimpanzees and studies of human tissues obtained post-mortem indicate that the virus *enters* through the alimentary tract,[1] but do not resolve the question as to whether it is conveyed by air particles—droplets, droplet nuclei, or dust—or via contaminated articles, food or drink, or by both. In similar manner, laboratory studies[2] leave doubt as to whether nasopharyngeal secretions or intestinal discharges, or both, are of importance as a medium of *exit* for the virus in order that it may reach new hosts. Recent discussions have centered attention very largely upon the latter as a possible route of transmission, that is, by fecal contamination.

The studies of Kramer, Gilliam, and Molner,[3] of McClure and Langmuir,[4] and of Piszczek, Shaughnessy, Zichis, and Levinson[5] have demonstrated that the virus may be present in the stools of persons not clinically ill or with illness of ill-defined character, as well as in those of persons suffering from paralytic or recognized abortive attacks. It may be recovered only upon a single occasion or found to persist up to several weeks. There is one instance on record[6] in which the virus was isolated from the stool of a child who had sustained a mild attack of the disease 123 days prior to the time when the test was made. It is generally agreed that the amount of virus in feces of human cases may be large, much larger than the amounts found in nasopharyngeal secretions. Paul and Trask[7] estimate that between 1,000 and 10,000 doses infective for the monkey may be present in 50 gm. of stool. *These facts suggest that in nature human fecal material is a copious source of the virus of poliomyelitis. From this source it has been traced for short distances and limited time periods in domestic sewage.* Paul and Trask,[8] in a large number of trials, were able to recover it in 4 instances where samples were collected in close proximity to hospitals in which patients with infantile paralysis were being treated. When samples of urban

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sewage were collected at random after epidemics in large cities, 22 tests were negative. When samples were collected routinely over a long period of time, at intervals of about 1 month, in New Haven and in New York, 85 were negative and from 2 the virus of poliomyelitis was recovered.

The 2 positive samples came from the Manhattan Grit Chamber, located in the heart of New York City—one in September, 1940, and the other in October, 1941—at a time of year when the incidence of the disease is maximum. In neither year, however, was it regarded as being epidemic. These observations may be interpreted as suggesting that under some conditions in human sewage the virus remains stable and may survive in detectable quantities for at least a short time.

Laboratory experiments also lend support to the idea that the virus may remain viable for some time outside of the human or animal host if conditions are favorable. Suspensions of human feces kept in the refrigerator for months may be found active upon inoculation into monkeys.

Moreover, it must be granted that it is theoretically possible that this virus in polluted water might pass through a treatment process used in purification for drinking purposes which would be adequate to retain or destroy *Escherichia coli*. Bacteriological standards of safety, using the density of *Escherichia coli* as an index, and based upon experience with typhoid fever, would not necessarily apply to this problem. Whether the chlorine concentrations ordinarily realized in the treatment of drinking water or of swimming pools is sufficient to inactivate the virus of poliomyelitis is still a matter of uncertainty.[7, 9] Many experiments designed to answer this question have been performed, but because of technical difficulties they do not lend themselves to ready interpretation of practical operating conditions. The same criticism may be offered with regard to the recent claim of Carlson, Ridenour, and McKhann that purification as ordinarily employed fails to destroy or remove the virus completely.[10]

Granting the possibility, the fact remains that up to the present time no one has conclusively demonstrated the presence of poliomyelitis virus in water used for drinking or bathing purposes, with one possible exception. Carl Kling,[11] in the State Bacteriological Institute in Sweden, has for several years tested samples of water from supplies which epidemiological observations suggested might be involved in transmission. Methods have gradually been improved. It is reported that during the period from July 1, 1938, to June 30, 1939, 27 such samples were tested by animal inoculation, and one of these was regarded as positive.

This positive sample came from a well which was suspected of being the source of infection of a 6 year old boy living on the same property. It was obtained the day *after* discovery of this case. The well was in dilapidated condition with walls of rubble and obviously open to human pollution. A virus recovered by animal inoculation was classified as belonging to the poliomyelitis group, although the strain had a low virulence for monkeys (*Macacus cynomologous* and *Macacus rhesus*) and the histological changes were not altogether typical. This is a suggestive result and, so far as I am aware, the only report in the literature of a poliomyelitis-like virus recovered from water which was customarily used for drinking purposes. However, failure in this respect with the methods available does not prove the absence of virus in sufficient quantities to infect, any more than does failure to demonstrate typhoid bacilli prove the innocence of a suspected water supply as a source of typhoid cases.

In summary, the evidence and considerations from the studies which have been briefly reviewed are consistent with the hypothesis that poliomyelitis may be water-borne. But they are also consistent with the hypothesis that this mode of transmission is unimportant, even though direct transfer of fecal material from infected to noninfected individuals in close contact is the ordinary route by which the virus travels from person to person. Indeed, they are not inconsistent with the hypothesis that the virus in feces is inconsequential in transmission, and that effective exit for transfer to a new host is made by air-borne secretions of the upper respiratory tract.

That water is a medium of transmission *of biological importance* can be accepted only if it can be shown that the behavior of the disease in nature can be satisfactorily explained on this basis. It is not sufficient merely to show that the causative parasite leaves the body of the human host in feces and survives a short time in sewage. If this were the only requirement, tuberculosis might have been classified as water-borne. It is not sufficient that a group of cases of an infectious disease be traced to drinking water polluted by back-siphonage in a plumbing system. A group of students at Michigan State College were infected with *Brucella melitensis* as a result of such an accident.[12] It is not sufficient that cases occur along water courses and river valleys even if the microparasite were recovered from samples of the water. Two small epidemics of tularemia in man, one in Russia [13] and one in Turkey,[14] have been attributed to drinking from streams which were contaminated with this organism. Jellison, Kohls, Butler and Weaver [15] have reported an epizoötic of turalemia that affected the beaver in numerous Montana streams from the late fall of 1939 to the late spring of 1940. Water from four streams was shown to be contaminated with *Pasteurella tularensis*. This suggested the possibility that contaminated stream water might be an occasional source of human infection, yet it does not justify classification of human tularemia as water-borne. More evidence than this is needed. ***It must be convincingly shown that the behavior of a disease in human communities is such as would be expected if the causative parasitic microörganism were dependent for continued dissemination, in part, or at times, upon the medium of contaminated water.***

Specifically, what is the behavior that would justify such an inference? The question can best be answered by reviewing certain observations which have been made with regard to the prevalence of cholera and typhoid or paratyphoid fever; dysentery, or diseases generally accepted to be water-borne.

In general, their prevalence has been correlated with a poor sanitary environment including, but not necessarily depending directly upon, water supplies subject to human fecal pollution. In communities with a common water supply subject to such pollution, the incidence has tended to be excessive and cases were scattered throughout the population in time, in place, and in persons (except as modified by immunity), as would be expected from a wide dissemination of the infective agent through the water distribution system. In some instances it has been possible to show that the incidence of one of these diseases was significantly greater in the group of people using the suspected water supply than in another or other groups using a different supply but *alike in all pertinent respects.* A classical example is John Snow's analysis of the mode of communication of cholera in South London.

In other instances it has been possible to show that an abrupt decline in incidence immediately followed the in-

stallation of a water purification plant with living conditions changed in no other important respect. Or, *per contra*, increased incidence has abruptly followed some breakdown in the treatment process or distribution system of a common water supply. Numerous examples of these contingencies can be found in the typhoid history of American cities and towns.

Perhaps most convincing of all are the explosive outbreaks in which groups of people were simultaneously infected, and it was conclusively shown that the only medium of common dissemination to which all or nearly all could have been exposed was a water supply subject to human pollution. Finally, it is to be pointed out that wherever sanitation has been improved, including the improvement in water supplies, these diseases have been unable to maintain their prevalence in human populations and have tended to decrease or disappear. This is the sort of evidence upon which it has been generally accepted that they are or may be water-borne.

Turning now to the extensive literature on poliomyelitis which has accumulated since the initial observations of Wickman, *epidemiological evidence of this character is conspicuous by its absence*. The incidence of this disease has not been correlated with sanitary environment. It has never been shown that either the epidemic or the endemic incidence of poliomyelitis is significantly associated with the quality and safety of water supplies as determined by either a sanitary survey or by bacteriological analysis or by both. Assuming that filtration and chlorination are ineffective in removing the virus, then, for example, it would be expected that the incidence would have increased over a period of years in the cities which obtain their water from the Ohio River with its speedily increasing load of sewage pollution from domestic sources. On the other hand, it would be expected that small communities supplied with water, whether treated and chlorinated or not, but from watersheds or underground supplies which careful sanitary surveys have shown were protected from human fecal pollution, would have a conspicuously favorable experience with poliomyelitis, yet sharp outbreaks have occurred in such communities. When poliomyelitis has invaded large urban communities whose population is served simultaneously by a common water supply, the cases have not been scattered in time, in place, and persons in the sudden random fashion which is expected. The disease has characteristically manifested a slow radial or progressive spread from an initial focus. When poliomyelitis has occurred in rural areas, it has moved at a strikingly constant speed from place to place in a wholly unpredictable manner, but unaffected by the character of the local private water supplies. Finally, and perhaps most important of all, there is on record at present not a single instance of an explosive outbreak of this disease which has been attributed to simultaneous exposure of a group of people to a common source of water.

Nor can the absence of epidemiological evidence incriminating water as a medium of transmission be attributed to insufficient investigation. There are now in the literature a large number of studies made by competent epidemiologists of the conditions under which poliomyelitis occurs and spreads. Many of these investigators have had extensive experience in tracing water-borne epidemics of typhoid. Even if it be true that most outbreaks, or the majority of cases of any single outbreak of poliomyelitis, are subclinical in character, it seems quite improbable that important and pertinent facts with regard to the behavior of the disease would have remained concealed. There have been many occasions when the recognized paralytic cases were sufficiently numer-

ous to afford an index or a clue to what was happening.

In conclusion, although evidence derived from laboratory studies is consistent with the hypothesis that poliomyelitis may be water-borne, it is also consistent with transmission by other routes. On the other hand, this hypothesis is not satisfactory in explaining the natural behavior of this disease in human populations. Its epidemiological pattern differs significantly from that of other diseases known to be water-borne. There is at present insufficient evidence to justify the belief that water is a medium which is of any practical importance in spread.

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Joint Responsibilities and Indirect Services of the Health Department in Environmental Sanitation*

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ISOLATIONISM is a policy as unfortunate for health departments as it is for nations. Where the objectives are actual improvement of community health and sanitation, a progressive health department must of necessity integrate its services with those of many other agencies. It must also accept the responsibilities of coöperation so that there may be mutual applications of authority, technics, and facilities to problems common to several agencies—governmental or private.

The field in which opportunities are most numerous and varied for such coöperation and extension of services is that of environmental sanitation. Here the health department has contact with many other departments of government in the promotion and maintenance of an orderly and properly functioning society. The technics by which the community maintains its material functioning are essentially engineering. Construction, production, transportation, communication, sanitation, are basically engineering activities upon which the modern civilized community depends. Any health authority which would participate effectually in the physical functioning of the community must be able to comprehend its engineering problems and to contribute engineering judgment and service to their solution.

It follows, as a matter of logic, that such a health authority must contain within its organization one or more competent public health engineers or have readily available the services, as necessary, of a sanitary engineering staff. Without such personnel, a health department is likely to be an ignorant or helpless bystander in vital aspects of a community's development or to contribute only superficially and sporadically to its hygiene. The community is an organic unit and the engineer is its physician.

This discussion deals with the relationships of the health department through its engineering division with other engineering and technical agencies and organizations. The background of the discussion is the writer's experience in a county department of health (Nassau County, N. Y.) serving a population of some 450,000 included in 68 municipalities. It is not to be inferred that the various aspects of the joint responsibilities and indirect services here reviewed have been fully or even partially exemplified in the writer's own department. However, in common with public health engineers elsewhere, possibilities of coöperation have appeared and have been developed more or less as local circumstances and resources would permit.

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It is the usual experience of public health engineers to undertake—usually below the state level—their work in places where such service is long overdue and where neglect of sanitation has resulted in an accumulation of distressing conditions and bad sanitary practices. In such localities other departments of government are likely to be well entrenched and habituated to minor, and perhaps to major, impositions upon health department personnel. Local officials and the public in general usually have developed peculiar ideas about the functions and responsibilities of the health department, particularly with respect to sanitation and the extent of public health police powers. Under such circumstances, the local health authority upon acquiring engineering personnel must thereupon undertake the complex task of overcoming past negligence, giving guidance to the further sanitary development of the community, and educating the associated officials and the public to an understanding of its legitimate activities and interests in the province of sanitation.

Concerning environmental sanitation, the most important relationship of the local health department is that with the state health department and its engineering division. The state's supervision of major utilities such as water supply and sewerage is essentially an effort at remote control and is usually inadequate until, by districting or by the acquisition of public health engineers in local jurisdictions, technical service becomes available on a day to day basis rather than at intervals of months or years. This relationship between districts, county, and city engineers and the state engineering division should be founded on mutual confidence and interdependence. Assuming that reasonably sound engineering judgment is being used, each should give positive and consistent support to the other in decisions, programs, and projects. The curse of political interference in engineering matters can best be resisted by a strong professional liaison between the state and local engineers. Moral stamina is required at both ends of the line to checkmate expediency and fence-straddling.

With the concentration of tax moneys in the state and federal governments and the paternalistic return of such funds for the support of local government functions such as public health work, a new phase of joint responsibility and of indirect service has developed, at least potentially. The principle of this relationship is that the contributing agency, clothed in the mantle of omniscience, imposes higher standards of personnel and performance upon the local department as a condition of the aid. The enforcement of such standards would indeed constitute the highest type of indirect service to a community, but too often the fear of offense to powerful political groups or to entrenched professional organizations permits flagrant misappropriation and waste of these funds. Statesmanship and courage of the highest order are needed to prevent the employment of incompetents and to oust those who hold sinecures. Progress in public health administration and service is cheap where it costs only the enmity of the greedy and the irresponsible.

In the fields of water supply and sewage disposal, organizations of administrative and operating personnel are quite important and have been strongly fostered by state sanitary engineers. Local public health engineers can contribute much to the functioning of these associations by bringing isolated local officials into contact with their professional groups and with each other. In Nassau County, the officials of 42 public water systems were found to have no organized relationship and little acquaintance with each other. In initiating a public health engineering program af-

fecting these supplies, the engineers of the health department found the lack of such an organization of water superintendents a serious handicap to the quick and effective dissemination of information and in enlisting general understanding and support of the work. Consequently, the health department took the initiative in forming such a group and has since furnished the clerical service and sustained its continuity. This activity has brought the water supply officials into close and sympathetic relationship with the health department, a situation contrasting sharply with their previous indifference to local health officers and remoteness from the state sanitary engineering division. Currently, this organization of water superintendents has proved to be extremely valuable in carrying out measures of wartime preparedness for civilian defense and, more particularly, the New York State mutual aid plan for water supply service, sponsored by the State Health Department.[1]

Neighboring health departments have many opportunities to reinforce each other's dealings with problems of sanitation. While the state is usually the coordinating agency where waters are used jointly for public supply or waste disposal, there are many situations in which direct relationships promote quicker solutions of problems and a beneficial exchange of information and coördination of efforts. This is possible, however, only where each department has technical personnel speaking the common language of engineering and sanitation. The writer recalls his early efforts in the metropolitan area to establish helpful contacts with the New York City Department of Health. It was a disappointing experience because that department, the largest in the world in point of personnel, then had not one public health engineer on its staff, and its sanitary program was unorganized and shaped largely by the force of external events. Fortunately that situation was changed with the appointment of a capable public health engineer as Deputy Commissioner of the Health Department.

Since that event, satisfactory common approaches have been made to many joint problems in the metropolitan area. The establishment of local standards for bathing beaches is an example in which, under engineering direction, basic information regarding the intensity of pollution in tidal waters was obtained by systematic sampling. Ratings of beaches were then established in the several health jurisdictions, taking into account the proximity and volume of pollution sources and the recreational necessities of tributary populations. Through press releases the public was given reliable information from authoritative agencies, thereby relieving several newspapers of the occasion for well meant but actually presumptuous reports on bathing waters based on inadequate sampling and reportorial interpretations.

Responsibility for jointly used milk supplies furnishes opportunities either for conflict or coöperation among local health departments. The feeling on the part of one department that another does not have professionally competent and responsible personnel for the maintenance of a milk sanitation program is perhaps the most common obstacle to a sharing of the job. This, if true, is certainly a valid reason for distrust for which, however, the remedy is obvious. In the metropolitan area, as experienced public health engineers and technical personnel have been placed in charge of milk sanitation, an increasing degree of uniformity of regulations has been achieved, accompanied by a more confident acceptance by one department of another's work.

Present-day food sanitation concerns perhaps more agencies than any other problem in public health. The widespread sources of food supplies, their complex processing and transportation,

and the vast amount of food sold and consumed outside the home involve the local health department in a labyrinth of relationships with other regulatory bodies. The division of responsibility is usually not clearly defined and the overlapping of authority is confusing but, as these agencies slowly evolve better regulations and enforcement procedures, the integration of food control is improving.

Perhaps the most difficult relationship is that between local health and state food authorities. While the background and extent of authority exercised differ considerably in the various states, there is usually a conflict of some degree between the public health and the agricultural or marketing points of view. The state food control agency must of necessity concern itself with food quality, misbranding, adulteration, and other fraudulent practices and should properly direct its major efforts at those points where foods are handled or processed in bulk. Its local inspection should be chiefly a check on the observance of required standards and practices. This state agency must also deal with sanitation but chiefly from the standpoint of contamination, living or inert, being an aspect of adulteration. However, no practical degree of state inspection can furnish the local protection and control necessary to maintain decent standards of sanitation, particularly in the great numbers of retail establishments.

Unless the local health department recognizes rather broad responsibilities in the maintenance of food quality, it may leave a critical gap in the service properly demanded by the public. Food buyers consider cleanliness and wholesomeness of foods to be legitimate concerns of the health department, even though many such aspects of food sanitation have no obvious statistical relationship to communicable disease. The local health department can afford to ignore adulteration and misbranding of foods only if the state agency is functioning effectively, in which case the local responsibility becomes one of cooperation with the state inspection service in uncovering and reporting violations and in itself doing well the major job of sanitary control of foods and food selling places.

The production and distribution of shellfish afford opportunities in the maritime states for coöperation of seaboard health departments with the state agency having supervision of this food. In New York State, the Conservation Department, charged with this responsibility, does not have police power for the control of pollution which may ordinarily be exercised by health departments. Consequently, in recent years this agency has had to close more and more shellfish growing areas because of increasing pollution without being able to deal constructively with the problem by abating such pollution. The establishment of a county health department in Nassau County made possible a reversal of this destructive trend. Public health authority coupled with engineering service has accomplished the abatement of hundreds of discharges of sewage and the forestalling of many more along extensive shore lines.

The U. S. Food and Drug Administration, in its enforcement of the new federal food, drug and cosmetics act has displayed a welcome desire to establish mutually beneficial relationships with local health departments. Through its division of state coöperation, this agency has extended its coverage of the country and enlisted the aid of qualified local food inspection personnel by giving them definite individual authorization to act as its agents in certain respects. These local representatives may also give vital assistance through their ability to use public health police powers for the prompt embargo or seizure of foods under circumstances in which the federal agents may be handicapped by the slower

and more devious procedures of the act.

Another federal agency with which the local health department may coöperate to advantage is the Federal Housing Administration. Residential water supply and sewage disposal are always critical problems in unsewered areas, to which the general specifications of the FHA may not apply without local modification. In Nassau County, the FHA was found to be depending upon local health officers for certificates of approval of private sewage disposal installations where the local health authority had no standards, no basis of judgment, and no uniformity. Upon the establishment of the county department of health, this relationship and service was seized upon as a means of clearing up private sewage practices. Engineering standards for design and construction, adapted to the conditions on Long Island, were prepared and were then accepted by FHA. Some 6,000 certificates have since been issued. Without having to place all private sewage disposal construction on a permit basis, the health department has thus taken advantage of the FHA plan to force numerous developers, builders, and sewage disposal contractors into proper practices, and has thereby rendered a valuable service to FHA, and to numerous purchasers of homes.

With respect to the housing problem, the local health department has many opportunities for indirect service through coöperation with other agencies concerned with slum clearance. First of all the health authority must make clear the limits of its special powers, the involvement of other departments, and the necessity of the community exercising its general police powers. The essence of housing improvement is the provision of new low rental housing, and it is only in conjunction with such a program that the health department can grapple very extensively with rehabilitation and strict enforcement of sanitary regulations.

In New York State, the legislature has empowered municipalities to establish housing authorities which may acquire land, raze slum buildings, and construct and operate housing projects. It is with such an agency that the local health department can collaborate to best advantage in giving survey information and guidance, and in enforcing sanitary regulations contributing directly to the housing improvement. This may involve furnishing personnel and carrying through prosecutions which would be difficult for a housing authority to handle.

When the health department, such as in a county, has jurisdiction in a number of municipalities, there may be opportunity for coördinating housing activities and for stimulating parallel attacks upon bad conditions in adjacent areas which would minimize the shifting of population from the unimproved to the improved area. In the writer's experience, the local housing authorities are sometimes appointed for the purpose of conducting delaying actions rather than for a genuine attack upon the local slum conditions. In such a situation the health department must beware that it does not lend itself to an attempt to drive out of a particular community an undesired element of the population through the destruction of outworn dwellings on any considerable scale and without replacement.

In connection with housing there exists between the health and welfare departments a joint concern for the living quarters of families on relief. Welfare authorities are continually plagued with the problem of finding accommodations for tenants whom many landlords consider undesirable. Such families, with or without the guidance of welfare supervisors, may move into unsuitable dwellings, the occupancy of which may thereupon create unsanitary conditions and violations of the public health regulations. The necessity of the health department's prosecuting a landlord or

evicting a tenant to abate a violation where rents are being paid from public funds could be largely obviated by an arrangement whereby the health department would make prior inspections of housing before occupancy and indicate to the welfare officials whether or not sanitary facilities are adequate and the structures suitable. There is similar need for a satisfactory relationship between the health department and the local agency handling properties held for tax sales and also with the Home Owners Loan Corporation, the latter being the most frequently encountered owner of properties in distress. Since the health department cannot readily bring its police power to bear upon another agency of government, prompt abatement of sanitary violations depends upon that mutual respect and coöperation which should exist among responsible government officials.

Housing, in its larger aspects, becomes community planning, the newest function of municipal government. The actual application of planning as an expression of a broad and sweeping public interest looking far into the future must necessarily trample upon many private interests. The deliberate, long range shaping of urban growth requires the merging and adjustment of many diverse interests among which public health and sanitation must be included. The health department has or should have a minimum of political inhibitions and its contribution to planning should be freer and bolder than that of some other interests normally making up the planning group. The engineer of the health department, whose job it is to think more or less continuously about the environment in terms of evolving comfort and cleanliness should, therefore, be a member of such a board or of an authoritative advisory group.

Another variety of sanitary problems is encountered in our factories and mercantile establishments where basic sanitation and industrial hazards both require attention. In New York State, industrial hygiene is divorced from public health at the state level and local health departments find it difficult to contribute to industrial sanitation without the appearance of intrusion upon another department's responsibilities. However, where such responsibilities are not being effectively discharged and where inspection is perfunctorily performed by non-technical personnel, there seems to be occasion for local health departments having engineering personnel to deal with factory sanitation and industrial hygiene under the public health police power. Again the lack of technical personnel in the local health department or in the state agency concerned with industrial hygiene is a barrier to effective coöperation on a common problem. Furthermore, coöperation with health departments involves the risk of making clearer the fact that industrial hygiene is a function more properly in the field of public health than of labor.

Another local agency having important influence upon the environment is the building department and its related zoning board. Their dealings with many structures and uses such as factories, apartment dwellings, nursing and boarding homes, food selling places and places of public assembly, and so-called offensive trades, affect interest of the health department, and there are always the common concerns with water supply, plumbing, sewage disposal, lighting, ventilation, and prevention of nuisances. The zoning and building authority can give and derive much assistance from the health department, provided the latter has the technical personnel to express the public health view of these matters.

The regulation of plumbing, which is properly a function of the building department, is one which benefits from a positive health department interest.

However, too often the preparation of a plumbing code and the indirect control of its enforcement is turned over to local plumbers, thereby placing the public interest, the only valid basis for such exercise of police power, at the mercy of a private interest, usually both selfish and unenlightened. The influence of an official public health engineer in the community can do much in bringing about a representation of the public interest, in modernizing the regulations with respect to private sewage disposal, cross-connections, back-siphonage protection, etc.

Currently the war effort has placed new or greatly expanded military establishments within many health jurisdictions and has thereby afforded opportunities for health department personnel to render valuable but not always appreciated assistance. A rapidly expanding military post creates problems of sanitation which may not be dealt with as rationally as observant local officials would like. The sudden authority which comes to military personnel not fully prepared for such responsibilities frequently results in arbitrary action based on personal prejudices. The assumption in the army organization that veterinarians are inherently qualified to assume responsibility for milk sanitation, meat inspection and food control, that physicians are epidemiologists and that engineer officers can cope with all sanitary problems, is too frequently disproved. The writer has observed the rapid expansion of a regular army post in the course of which county health department personnel have had opportunities to assist army authorities in matters of water supply, sewage disposal, garbage and refuse disposal, food and milk sanitation, water main disinfection, and epidemiological investigations, in addition to the usual work of the health authority in the surrounding areas.

In concluding this review, its minor theme, which has no doubt become apparent, might be more explicitly stated as—the usefulness of the public health engineer in representing and extending the influence of the local health department. It is an invitation to the local health officer, now without such administrative and technical assistance, to consider the manifold ways in which his authority and service to the community may be expanded and strengthened. The activities here reviewed are so essential in the functioning of the larger municipal and county health jurisdictions that the local health officer, in failing to provide both the direct and indirect services of the public health engineer, is, in effect, inviting other agencies of government to meet the need. The local health department cannot afford to default on environmental sanitation if it is to assume its proper responsibilities in the service of the community.

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Tetanus Toxoid, Its Use in the United States Army*

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IN 1924, Descomby[1] produced tetanus toxoid by the application of the technic Ramon[2] had described for the removal of the toxic properties from diphtheria toxin. Later, Ramon and Zoeller,[3] having demonstrated its antigenic value, suggested the use of tetanus toxoid as an agent for active immunization against tetanus. Since that time, the value of this procedure has been demonstrated by many workers, and active immunization with tetanus toxoid has largely supplanted passive protection with antitoxin for the prevention of tetanus among battle casualties. Reports from the British and French Armies have indicated its efficacy under actual battle conditions, as has the experience of our own troops in combat zones.

THE PRESENT PROGRAM

Plans for the active immunization against tetanus of American troops were made early in 1940, and in the fore part of 1941 the procedure was adopted as routine for all military personnel on active duty.

The agent selected was fluid or plain tetanus toxoid. The toxoids used by the U. S. Army are procured from commercial biological laboratories licensed by the National Institute of Health for the production and sale of this material. The toxins which are converted into toxoids are produced in infusion broth media fortified by various types of peptones or meat digests. These toxoids must conform in all respects to the requirements of the Biologics Control Division of the National Institute. To meet these requirements, the original toxin must have a potency of at least 10,000 guinea pig m.l.d. per ml., and be detoxified by the addition of not more than 0.4 per cent of formalin. The toxoid so produced must be shown to be completely atoxic for guinea pigs when injected subcutaneously in doses of 5 ml. The retention of specific antigenicity is demonstrated by the subcutaneous injection of 1 ml. of the toxoid into each of a group of guinea pigs. At least 80 per cent of the animals so prepared must show complete protection against 10 m.l.d. of toxin administered 6 weeks later. In addition to these and the other requirements of the National Institute of Health, the toxoid used by the Army is subjected to certain additional safety tests prior to its distribution.

The decision to employ fluid rather than alum-precipitated toxoid was not entirely an arbitrary one. This decision was based in large part on the satisfactory experience of the British and French with the use of a fluid prepara-

* Presented before a Joint Session of the Health Officers, Laboratory, and Epidemiology Sections of the American Public Health Association at the Seventy-First Annual Meeting in St. Louis, Mo., October 27, 1942.

tion. The relative infrequency of reactions attending the administration of this form of toxoid and the evidence at hand attesting to its efficacy were thought to constitute a sound basis for its adoption.

In the consideration of the use of alum-precipitated toxoid, its antigenic properties were well appreciated. However, the use of such precipitates had been limited for the most part to the administration of alum diphtheria toxoid to children. This lack of experience with precipitated toxoids in adults, and the knowledge that the addition of alum to an antigen in many instances tends to increase its sensitizing action, were additional factors influencing the choice of the type of toxoid.

The use of toxoid for the development of adequate protection against tetanus involves the establishment of a basic active immunity and the subsequent reinforcement of this immunity by the administration of stimulating, or booster, doses. Such a procedure is currently followed in the Army.

As soon as possible after entrance upon active duty, all military personnel are given a series of three subcutaneous injections of tetanus toxoid. The doses are 1 ml. each and are administered at intervals of 3 weeks. Under ordinary circumstances, a single stimulating dose of 1 ml. of the toxoid is administered at the end of one year after the initial series. As an added safeguard, a single stimulating dose of 1 ml. is administered during the month prior to departure for a theater of operations, unless such departure is within the 6 months period subsequent to the administration of a previous dose. The completion of the initial series and the administration of the first stimulating dose are recorded on the individual's metal identification tag, as well as in his personal immunization record.

An emergency stimulating dose of toxoid is administered upon the incurrence of wounds or severe burns on the battlefield, at the time of secondary operations or manipulations of old wounds, or at any other time when danger from tetanus is considered to be a possibility. Antitoxin is not administered for prophylaxis unless there is reason to doubt that the individual in question had previously received at least the initial series of toxoid injections. If such a doubt does exist, a prophylactic dose of tetanus antitoxin is administered and active immunization with toxoid is initiated at the same time.

REACTIONS

While the administration of tetanus toxoid has been attended by some reactions, particularly early in the program, these have not constituted a major problem and have not seriously hampered the practice of active immunization.

The reactions encountered may be classified into two main categories. Those in the first category have caused no concern and are manifested by such symptoms as headache, weakness, general malaise, local soreness of the arm, and occasionally chills and fever. Such reactions are not unlike those occurring following typhoid vaccination. However, these reactions apparently occur with less frequency after the administration of tetanus toxoid than following the injection of triple typhoid vaccine.

The second category of reactions is made up of those occurring, in the majority of instances, within 30 minutes after the injection. They are characterized in general by flushing and itching of the skin, local and generalized urticarial eruptions, and edema of the lips and eyelids. Occasional instances of edema of the glottis and dyspnea have been observed. These reactions, like those described above, have not been encountered with any great frequency. The reported incidence during the early part of the immunization program was about 0.05 per cent of injections, or

about one such reaction in every 2,000 injections. This incidence has now decreased markedly, for reasons which will be brought out later.

The nature of these reactions, rather than their frequency, stimulated considerable interest in them and their cause. It became apparent very soon that they were manifestations of sensitivity to some constituent of the toxoids being used. This was confirmed in several instances by the exhibition of typical skin reactions of sensitivity to the intradermal injection of 0.1 ml. of a 1:100 dilution of the toxoid which had been administered just prior to the reaction. At the same time, several individuals, who had exhibited reactions not attributed to sensitivity, responded negatively to similar tests. Approximately 85 per cent of the reactions of sensitivity occurred after the second or third injection, indicating that at least a portion of the reactors had been sensitized by a previous dose of toxoid.

In view of the observations of Whittingham,[4] Parish and Oakley,[5] and Cooke and his associates,[6] the reports of reactions were analyzed to determine whether or not there seemed to be any connection between the number of reactions reported and the type of peptone contained in the toxoid. This analysis indicated that those toxoids containing Witte or Berna peptones were responsible for the large majority of the reactions. From data collected early in the program, it appeared that the proportion of reactions of sensitivity following the injection of these toxoids was at least six times that following the use of toxoids free from these particular peptones.

As a result of these findings, the procurement and distribution of tetanus toxoid containing Witte or Berna peptones were discontinued. As indicated above, the incidence of reactions of sensitivity has fallen sharply since that time. The exact proportion of such reactions following the administration of the currently distributed toxoid is not known. At the present time, reports of such reactions are extremely rare and the reporting of the total number of injections administered tends to be incomplete in the absence of reactions. It is considered to be a reasonable estimate, however, that the frequency of these reactions is now less than one in 10,000 injections.

While this incidence is extremely low and gives rise to no real concern, it must be borne in mind that the toxoids in current use do contain certain peptones and other proteins which may be potential sensitizing agents. These toxoids do give rise to occasional primary reactions and have been shown to be capable of producting positive skin tests in individuals who have previously reacted in a sensitive manner to Witte and Berna peptone toxoids.

Shortly after the appearance of the reactions of sensitivity, it was suggested that tetanus toxoid produced on a simplified medium such as that reported in 1940 by Mueller and Miller[7] might be utilized. Mueller[8] has carried on intensive investigations along this line since that time, and has produced tetanus toxoid in his own laboratory, using a casein hydrolysate medium. Some of this toxoid has been used as skin test material in individuals known to be sensitive to Witte and Berna peptone toxoids. There were no positive reactions elicited, although, as indicated above, many of these same individuals did react positively to certain of the toxoids in current use. Some of the commercial laboratories have also worked on this problem, but they have not, as yet, made available satisfactory toxoids produced on the simplified medium. It is understood that these investigations are continuing, and it is hoped that toxoids produced in protein-free media or similar non-reaction producing media, can be made available.

RESULTS

Within the experience to the present time, the results following the use of toxoid in the manner described have been completely satisfactory. While no large-scale studies for the determination of blood antitoxin levels have been made, the antitoxin content of several small groups of blood sera has been determined.* One group was studied in relation to the length of time required to develop protection after the completion of the initial series of injections. Serum specimens were obtained from each of 9 individuals 1 week after the last injection of the initial series. At the same time, a fourth, or stimulating, dose of toxoid was administered in the same manner as if required by a potentially infected wound. A week after this fourth injection, additional serum specimens were obtained. All of the first specimens taken (1 week after the third dose) contained at least 0.1 unit of antitoxin per ml. and three contained 1.0 unit or more per ml. Of the sera taken 1 week after the fourth, or stimulating dose, two contained more than 0.1 unit, but less than 0.5 unit; three contained more than 0.5 unit, but less than 1.0 unit; and the remainder contained at least 2.0 units of antitoxin per ml. Since the amounts of circulating antitoxin necessary for protection have been stated by various workers to be 0.01 unit to 0.2 unit per ml. of serum,[9, 10] it was considered reasonable to assume that there is adequate protection, based on active immunity, after the completion of the initial series of three injections of tetanus toxoid and that there is no indication for the use of prophylactic antitoxin after this immunity has been established. In this respect, it would appear obvious that circulating antitoxin resulting from active immunization is potentially more significant immunologically than is that obtained as a result of passive immunization.

Serum specimens have also been obtained from individuals just before and 1 week after the administration of the stimulating dose given 1 year following the initial series. Sera collected in this manner have been found to contain 0.001 to 0.1 unit of antitoxin per ml. before the stimulating dose, and, in the majority of instances, more than 0.6 unit per ml.† 1 week after the stimulating dose. These titers correspond closely with those obtained under more or less similar circumstances by Sneath and Kerslake,[11] Lincoln and Greenwald,[12] Gold,[13] and others.

Under ordinary conditions, the incidence of tetanus in the Army, as in the civil population of this country, is very low. Since June, 1941, when the present tetanus immunization program was adopted, there have been but 4 cases reported from the entire Army. None of these were in immunized individuals. It is of especial interest to note that no cases of tetanus have been reported from battle casualties. This may assume some significance when considered with the fact that other anaerobic infections have been reported from certain of the active theaters and that, in one of these areas at least, considerable potential danger from tetanus infection is known to exist.[14]

It is perhaps too early in the experience of the present war to draw any conclusions from the evidence at hand. However, it is believed that the present practice with respect to the prevention of tetanus among battle casualties affords our fighting forces a maximum of protection.

* The antitoxin determinations reported were performed by Benjamin T. Sockrider, at the National Institute of Health, Bethesda, Md., and the serum specimens were collected by various medical corps officers at the Army Medical School, the Washington General Dispensary, and elsewhere.

† The actual antitoxin content of many of these sera was not determined, since, in most instances, they were not tested for more than 0.6 unit per ml.

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Surveys of the Nutrition of Populations*

Description of the Population, General Methods and Procedures, and the Findings in Respect to the Energy Principle (Calories) in a Rural Population in Middle Tennessee

PART 2

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RESULTS

The mean calorie intakes according to age, sex, and race, together with related factors, are shown in Table 6 where they are compared with the recommended daily allowances of the Food and Nutrition Board of the National Research Council.† The age groups have been selected to correspond to those used in the recommendations. Subjects under one year of age have been omitted from this and subsequent tables because many were breast fed, at least in part, and we were unsuccessful in determining accurately the calorie intake. Furthermore, the great variation in requirements month by month in this age period would necessitate separation at many points. With only about 2 per cent of subjects (25 individuals) in this entire

TABLE 6

Mean Calorie Intake and Related Factors According to Age, Sex, and Race.

	1–3 Yrs. M-F*	4–6 Yrs. M-F	7–9 Yrs. M-F	10–12 Yrs. M-F	13–15 Yrs. M	13–15 Yrs. F	16–20 Yrs. M	16–20 Yrs. F	21+ Yrs. M	21+ Yrs. F
					White					
Number in Group	36	43	66	50	19	18	34	29	193	214
Mean Age, years	2	5	8	11	14	14	18	18	45	42
Mean Height, inches	34	43	51	58	64	63	69	65	70	64
Mean Intake, calories	1,210	1,547	1,726	1,855	2,494	1,691	2,723	1,975	2,581	1,736
Recommended allowances, calories †	1,200	1,600	2,000	2,500	3,200	2,800	3,800	2,400	3,000	2,500
Observed Mean Weight, lbs.	28	41	55	76	107	98	143	117	157	139
Expected Mean Weight for age and Height,‡ lbs.	27	41	61	84	113	112	149	126	170	138
					Colored					
Number in Group	33	24	23	31	15	14	20	25	94	89
Mean Age, years	2	5	8	11	15	14	18	18	44	44
Mean Height, inches	34	44	51	58	65	64	68	64	69	64
Mean Intake, calories	700	1,008	1,308	1,488	1,643	1,418	2,065	1,396	2,005	1,315
Recommended allowances, calories †	1,200	1,600	2,000	2,500	3,200	2,800	3,800	2,400	3,000	2,500
Observed Mean Weight, lbs.	27	42	56	80	110	110	152	129	152	145
Expected Mean Weight for age and Height,‡ lbs.	27	43	61	85	120	117	143	123	163	138

* M = Male; F = Female
† Food and Nutrition Board, National Research Council
‡ Baldwin-Wood Tables

* The studies referred to herein were conducted under the auspices of the International Health Division of the Rockefeller Foundation of New York City by the Nutrition Unit of the Departments of Medicine and Biochemistry of the Vanderbilt University School of Medicine, Nashville, Tenn.

† Only the individual, three day record of intake has been utilized in this analysis. An analysis of the food intake as revealed by the week's inventory and purchase and a comparison of the latter with the individual intake records will be the subject of a later paper.

group the sub-groups would be so small that the data would have no statistical significance.

It will be observed that with the exception of the 1 through 6 year white subjects the mean calorie intakes in every instance were significantly less than the daily allowances of the Food and Nutrition Board. This deficit increases irregularly with increasing age and is greater in the Negroes. The deficit ranges from 274 calories in the case of the 7–9 year male and female whites to a maximum of 1,735 calories in the 16–20 Negro males.

The distribution of the calorie intakes for race, age, and sex is shown in Table 7 together with the standard deviation and the standard error of the mean. If 1,250 calories be taken as the mini-

TABLE 7

Distribution of Calorie Intakes According to Age, Sex, and Race *

	Number of Subjects										
Calorie Intake	*1–3 Yrs.* † *M-F*	*4–6 Yrs. M-F*	*7–9 Yrs. M-F*	*10–12 Yrs. M-F*	*13–15 Yrs. M*	*13–15 Yrs. F*	*16–20 Yrs. M*	*16–20 Yrs. F*	*21+ Yrs. M*	*21+ Yrs. F*	*Total*
					White						
<1,000	13	5	6	2	0	1	1	1	1	16	46
1,000–1,249	12	4	8	5	1	2	0	0	4	26	62
1,250–1,499	11	16	9	8	0	5	1	5	8	37	100
1,500–1,749	3	8	11	14	1	5	1	5	17	47	112
1,750–1,999	1	9	17	4	3	1	2	4	20	37	98
2,000–2,249	0	4	5	5	4	2	4	7	26	30	87
2,250–2,499	0	1	3	2	3	1	3	2	31	12	58
2,500–2,749	0	1	4	4	3	1	8	4	23	10	58
2,750–2,999	1	0	2	4	1	1	4	2	29	4	48
3,000–3,499	0	0	1	2	3	0	10	0	34	5	55
3,500+	0	0	0	0	2	0	3	0	25	1	31
Unknown	0	0	0	1	0	0	3	3	10	4	21
Total	41	48	66	51	21	19	40	33	228	229	776
Mean Calories	1,210	1,547	1,728	1,855	2,494	1,691	2,723	1,975	2,581	1,736	2,015
Standard Error of Mean	57.6	57.6	65.9	87.8	154.5	120.7	112.3	91	48.8	36.6	26.4
Standard Deviation	369	399	539	620	709	526	683	498	721	549	726
Median	1,157	1,485	1,739	1,679	2,375	1,575	2,703	2,000	2,522	1,678	1,897
					Colored						
<1,000	30	14	9	5	4	1	0	5	4	32	104
1,000–1,249	1	7	2	7	1	1	3	4	8	18	52
1,250–1,499	1	2	3	6	0	6	2	4	12	15	51
1,500–1,749	1	1	5	5	3	3	3	7	16	9	53
1,750–1,999	0	0	4	4	3	1	2	3	10	8	35
2,000–2,249	0	0	1	0	0	1	1	1	15	3	22
2,250–2,499	0	0	0	3	0	0	4	0	10	4	21
2,500–2,749	0	0	0	0	1	0	3	0	7	2	13
2,750–2,999	0	0	0	1	1	0	2	0	6	0	10
3,000–3,499	0	0	0	0	1	0	1	0	2	0	4
3,500+	0	0	0	0	0	0	0	0	5	0	5
Unknown	1	0	2	0	1	2	1	0	3	5	15
Total	34	24	26	31	15	15	22	24	98	96	385
Mean Calories	700	1,008	1,308	1,488	1,643	1,418	2,066	1,396	2,005	1,315	1,519
Standard Error of Mean	49.8	62.1	88.2	90.4	230.6	91.4	143.5	76.6	71.7	49.4	33.3
Standard Deviation	287	304	450	504	863	342	658	375	699	471	641
Median	650	983	1,366	1,396	1,834	1,450	2,125	1,438	1,938	1,288	1,390

* 25 Children under one year of age have been omitted
† M = Male; F = Female

mum recommended intake for all ages over 1 year (the lowest recommended allowance of the Food and Nutrition Board for subjects over one year of age is 1,200 calories) 14.3 per cent of white subjects and 42.1 per cent of colored subjects, or 23.4 per cent of all subjects one year or older had intakes below the minimum. As might be expected, the highest incidence of failure to meet the recommended allowances, 75.6 per cent, was in the youngest group, (1–3 years), those whose recommended allowance is practically at the minimum level for the entire group. However, the second highest incidence, 29.1 per cent, is in the females 21 years and over. Divided into white and colored the figures are 61 and 93.9 and 18.6 and 54.9 per cent respectively. Because the table does not indicate the levels of intake below 1,000 it is impossible to determine completely the magnitude of the apparent deficit in the age group 1–3. Examination of the individual records however indicates that the deficit there is as severe as in the older ages.

In Table 8 the ratios of the mean calorie intake of the various age and sex groups to the intake of males over 21 are compared with similar ratios calculated from the recommended daily allowances of the Food and Nutrition Board. In many of the groups the ratios calculated from our data are quite similar to those calculated from the recommended allowances indicating that for those groups the proportionate distribution of food as concerns calories was usual though at a lower absolute level, compared with the recommended allowances. However, for certain groups a considerably lower ratio is found. These include males and females of 10–15, both sexes of the colored 16–20 year olds, and the white males of this same age group, as well as the females of 21+ of both races. In addition the Negro children 1–3 have a lower ratio. The tendency for the lower ratios to be most frequent in the age groups around puberty indicates a significant lack of correspondence between intake and the large allowances suggested for this period.

TABLE 8

Ratio of the Mean Calorie Intake of Various Age Groups to the Intake of Males of 21 Years and Over

		Mean Calorie Intake and Ratios According to Recommended Allowances *		*Observed Intakes and Ratios*			
				White		*Colored*	
Age	*Sex*	*Intake Calories*	*Ratio*	*Intake Calories*	*Ratio*	*Intake Calories*	*Ratio*
1– 3	M–F	1,200	0.40	1,210	0.468	700	0.354
4– 6	M–F	1,600	0.53	1,547	0.599	1,008	0.504
7– 9	M–F	2,000	0.67	1,726	0.668	1,308	0.652
10–12	M–F	2,500	0.88	1,855	0.718	1,488	0.742
13–15	M	3,200	1.07	2,494	0.963	1,643	0.819
13–15	F	2,800	0.93	1,691	0.651	1,418	0.707
16–20	M	3,800	1.27	2,723	1.050	2,065	1.030
16–20	F	2,400	0.80	1,975	0.765	1,396	0.696
21+	M	3,000	1.00	2,581	1.000	2,005	1.000
21+	F	2,400	0.88	1,736	0.673	1,315	0.655

* Food and Nutrition Board, National Research Council

The mean intake of carbohydrate in grams is shown in Table 9 distributed according to age, sex, and race, together with the carbohydrate intake expressed as calories and as per cent of total calories. The mean calories for each age, sex, and race group are given for

TABLE 9

Carbohydrate

Distribution of Intake According to Age, Sex, and Race by Grams, as Calories and as Per cent of Total Calories, Together with Related Factors *

Carbohydrate Intake Grams	*Number of Subjects*										
	1–3 Yrs. † *M-F*	*4–6 Yrs. M-F*	*7–9 Yrs. M-F*	*10–12 Yrs. M-F*	*13–15 Yrs. M*	*13–15 Yrs. F*	*16–20 Yrs. M*	*16–20 Yrs. F*	*21+ Yrs. M*	*21+ Yrs. F*	*Total*
					White						
<50	2	0	0	0	0	0	1	0	1	1	5
50– 99	3	1	3	0	0	0	0	1	0	2	10
100–149	20	8	4	3	1	3	2	0	8	24	73
150–199	14	15	20	10	0	2	0	5	12	52	130
200–249	1	18	15	14	4	7	1	10	17	54	141
250–299	1	5	13	10	6	2	7	9	51	52	156
300–349	0	0	6	7	3	3	7	4	39	25	94
350–399	0	1	1	4	1	2	9	0	38	7	63
400–499	0	0	3	1	5	0	8	1	34	6	58
500–549	0	0	0	1	0	0	2	0	5	0	8
550+	0	0	1	0	1	0	0	0	13	2	17
Unknown	0	0	0	1	0	0	3	3	10	4	21
Total	41	48	66	51	21	19	40	33	228	229	776
Mean Intake, Grams	140	198	233	256	326	241	344	248	336	237	267
Standard Error of Mean	7.16	7.79	11.03	11.56	26.30	17.99	17.34	12.15	7.38	5.44	3.88
Standard Deviation	45.85	54.0	90.25	81.75	120.55	78.4	105.5	66.55	108.95	81.7	106.85
Median (Grams)	139	200	219	243	296	232	353	245	326	231	256
CHO as Calories	560	792	932	1,024	1,304	964	1,376	992	1,344	948	1,068
CHO as Per cent of Total Cal.	46.3	51.2	53.9	55.2	52.3	57.0	50.5	50.2	52.1	54.6	53.0
Mean Total Calories	1,210	1,547	1,726	1,855	2,494	1,691	2,723	1,975	2,581	1,736	2,015
					Colored						
<50	1	0	0	0	0	0	0	0	0	0	1
50– 99	19	3	2	0	2	1	0	4	1	12	44
100–149	10	7	7	5	1	0	3	3	2	25	63
150–199	2	11	3	8	2	4	2	3	17	23	75
200–249	1	2	6	7	2	5	5	10	21	15	74
250–299	0	1	3	3	4	1	2	3	15	8	40
300–349	0	0	3	3	0	1	2	1	13	5	28
350–399	0	0	0	4	1	0	3	0	10	1	19
400–499	0	0	0	1	2	1	4	0	13	2	22
500–549	0	0	0	0	0	0	0	0	2	0	2
550+	0	0	0	0	0	1	0	0	1	0	2
Unknown	1	0	2	0	1	2	1	0	3	5	15
Total	34	24	26	31	15	15	22	24	98	96	385
Mean Intake, Grams	100	156	198	237	251	192	285	193	291	181	217
Standard Error of Mean	6.56	10.41	14.1	15.92	32.34	20.92	28.0	14.87	10.68	8.45	5.50
Standard Deviation	37.67	50.98	71.88	88.65	121.0	78.30	128.3	71.3	104.2	81.0	106.1
Median (Grams)	91	169	200	218	275	175	263	213	272	167	201
CHO as Calories	400	624	792	948	1,004	768	1,140	772	1,164	724	868
CHO as Per cent of Total Cal.	57.1	61.9	60.6	63.7	61.1	54.2	55.2	55.3	58.1	55.1	57.1
Mean Total Calories	700	1,008	1,308	1,488	1,643	1,418	2,065	1,396	2,005	1,315	1,519

* 25 Children under one year of age have been omitted

† M = Male; F = Female

TABLE 10

Fat

Distribution of Intake According to Age, Sex, and Race by Grams, as Calories and as Per cent of Total Calories; with Related Factors *

Fat Intake Grams	Number of Subjects										
	1–3 Yrs. † M-F	4–6 Yrs. M-F	7–9 Yrs. M-F	10–12 Yrs. M-F	13–15 Yrs. M	13–15 Yrs. F	16–20 Yrs. M	16–20 Yrs. F	21+ Yrs. M	21+ Yrs. F	Total
					White						
<25	6	1	2	0	0	0	0	0	1	5	15
25– 49	19	10	13	11	0	5	1	5	11	52	127
50– 59	7	13	9	10	3	4	3	2	5	37	93
60– 69	4	10	9	7	3	5	2	4	21	44	109
70– 79	4	8	12	5	1	3	0	9	24	36	102
80– 89	0	3	9	4	2	0	3	3	26	18	68
90– 99	1	0	4	3	3	0	4	2	19	5	41
100–109	0	2	4	4	2	1	8	2	21	10	54
110–124	0	0	2	4	2	0	4	1	33	11	57
125–149	0	1	1	1	2	0	9	2	27	3	46
150+	0	0	1	1	3	0	3	0	30	4	42
Unknown	0	0	0	1	0	1	3	3	10	4	22
Total	**41**	**48**	**66**	**51**	**21**	**19**	**40**	**33**	**228**	**229**	**776**
Mean Intake, Grams	45	62	70	72	99	56	108	78	103	67	79.4
Standard Error of Mean	3.07	3.05	3.30	4.14	7.6	4.56	5.03	4.76	1.88	1.4	1.26
Standard Deviation	19.6	21.17	27.05	29.3	34.8	19.9	30.7	26.1	26.6	21.1	34.7
Median	33	60	70	66	95	66	108	74	101	64	73.3
Fat as Calories	405	558	630	648	891	504	972	702	927	603	715
Fat as Per cent of Total Cal.	33.5	36.1	36.5	34.9	35.7	29.8	35.7	35.5	35.9	34.7	35.5
Mean Total Calories	1,210	1,547	1,726	1,855	2,494	1,691	2,723	1,975	2,581	1,736	2,015
					Colored						
<25	17	9	4	2	2	0	0	2	0	12	48
25– 49	15	15	11	16	5	6	5	10	19	52	154
50– 59	0	0	4	4	2	4	3	4	12	9	42
60– 69	1	0	4	5	1	2	3	6	14	10	46
70– 79	0	0	0	2	0	0	2	1	19	4	28
80– 89	0	0	1	0	0	0	2	1	10	3	17
90– 99	0	0	0	0	3	1	2	0	13	1	20
100–109	0	0	0	2	0	0	3	0	3	0	8
110–124	0	0	0	0	0	0	1	0	1	0	2
125–149	0	0	0	0	1	0	0	0	4	0	5
150+	0	0	0	0	0	0	0	0	0	0	0
Unknown	1	0	2	0	1	2	1	0	3	5	15
Total	**34**	**24**	**26**	**31**	**15**	**15**	**22**	**24**	**98**	**96**	**385**
Mean Intake, Grams	24	31	44	49	59	51.0	71	49	71	43	50
Standard Error of Mean	1.95	2.29	3.55	3.78	8.98	3.93	5.72	3.63	2.56	1.94	1.36
Standard Deviation	11.2	11.2	18.1	21.08	33.6	14.7	26.2	17.45	24.9	18.4	26.1
Median	23	30	44	43	50	48	68	50	71	31	34
Fat as Calories	216	279	396	441	531	459	639	441	639	387	450
Fat as Per cent of Total Cal.	30.9	27.7	30.3	29.6	32.3	32.4	30.9	31.6	31.9	29.4	29.6
Mean Total Calories	700	1,008	1,308	1,488	1,643	1,418	2,066	1,396	2,005	1,315	1,519

* 25 Children under one year of age have been omitted

† M = Male; F = Female

TABLE 11

Protein

Distribution of Intake According to Age, Sex, and Race by Grams, as Calories and as Per cent of Total Calories; with Related Factors *

Protein Intake Grams	Number of Subjects 1–3 Yrs. † M-F	4–6 Yrs. M-F	7–9 Yrs. M-F	10–12 Yrs. M-F	13–15 Yrs. M	13–15 Yrs. F	16–20 Yrs. M	16–20 Yrs. F	21+ Yrs. M	21+ Yrs. F	Total
					White						
<25	8	2	3	1	0	0	0	1	0	3	18
25– 49	26	24	24	19	2	11	1	7	19	96	227
50– 59	2	10	13	12	3	5	2	5	31	50	133
60– 69	1	7	15	4	2	1	6	7	28	37	108
70– 79	3	4	8	6	1	2	6	8	35	15	88
80– 89	1	0	2	4	8	0	6	0	30	16	67
90– 99	0	1	0	2	1	0	7	1	24	2	38
100–109	0	0	1	0	0	0	4	1	22	4	32
110–124	0	0	1	2	1	0	3	0	10	1	18
125+	0	0	1	0	3	0	2	0	19	1	26
Unknown	0	0	0	1	0	0	3	3	10	4	22
Total	41	48	66	51	21	19	40	33	228	229	776
Mean Intake, Grams	38	47	56	57	83	48	87	60	82	56	64
Standard Error of Mean	3.29	2.45	2.66	3.16	6.46	3.06	3.62	3.52	1.82	1.26	0.97
Standard Deviation	21.1	16.9	21.8	22.7	29.6	13.3	22.0	19.3	26.9	18.9	26.7
Median	30	34	56	52	83	46	86	63	79	53	60
Protein as Calories	152	188	224	228	332	192	348	240	328	224	256
Protein as Per cent of Total Calories	12.6	12.2	13.0	12.3	13.3	11.4	12.8	12.2	12.7	12.9	12.7
Mean Total Calories	1,210	1,547	1,726	1,855	2,494	1,696	2,723	1,975	2,581	1,736	2,015
					Colored						
<25	20	7	3	2	2	0	0	1	1	12	48
25– 49	12	15	18	17	3	11	5	14	25	51	171
50– 59	1	1	1	4	1	1	3	5	18	15	50
60– 69	0	1	2	3	3	1	4	3	15	7	39
70– 79	0	0	0	3	0	0	7	1	12	4	27
80– 89	0	0	0	2	3	0	0	0	10	2	17
90– 99	0	0	0	0	0	0	1	0	7	0	8
100–109	0	0	0	0	1	0	1	0	5	0	7
110–124	0	0	0	0	1	0	0	0	0	0	1
125+	0	0	0	0	0	0	0	0	2	0	2
Unknown	1	0	2	0	1	2	1	0	3	5	15
Total	34	24	26	31	15	15	22	24	98	96	385
Mean Intake, Grams	23	33	38	48	60	44	64	44	65	42	48
Standard Error of Mean	2.13	2.71	2.47	3.27	8.88	2.54	4.15	3.04	2.47	1.78	1.93
Standard Deviation	12.2	13.25	12.60	18.03	33.2	9.50	19.0	14.6	24.0	16.9	23.0
Median	22	31	37	33	55	32	66	44	62	32	33
Protein as Calories	92	132	152	192	240	176	256	176	260	168	192
Protein as Per cent of Total Calories	13.1	13.1	11.6	12.9	14.6	12.4	12.4	12.6	13.0	12.8	12.6
Mean Total Calories	700	1,008	1,308	1,488	1,643	1,418	2,066	1,396	2,005	1,315	1,519

* 25 Children under one year of age have been omitted.

† M = Male; F = Female

comparison. In Tables 10 and 11 the same data are given for fat and for total protein.

The distribution of the various nutritive principles with respect to all of these factors is distinctly abnormal in certain age groups, and there the standard deviations may not have their usual significance. For this reason the actual distributions are given, and in Table 12 the quartile distribution is also given.

The only practical objective evidence of the adequacy or deficiency of calories is the body weight which can be measured or can be estimated on the physical examination. The latter is based largely on an estimation of the amount of subcutaneous tissue in relation to the size, age, sex, and constitution of the individual. This can be supported by a statement regarding a tendency to overweight or underweight and a history of recent loss or gain in weight from the medical history. None of the latter two

TABLE 12

The Distribution of Calorie, Carbohydrate, Total Protein, and Fat Intake According to Quartiles

	Intake										
	1-3 Yrs. M-F	*4-6 Yrs. M-F*	*7-9 Yrs. M-F*	*10-12 Yrs. M-F*	*13-15 Yrs. M*	*13-15 Yrs. F*	*16-20 Yrs. M*	*16-20 Yrs. F*	*21+ Yrs. M*	*21+ Yrs. F*	*Total*
					Calories						
					White						
1st Quartile	947	1,297	1,326	1,422	2,016	1,338	2,271	1,575	2,043	1,344	1,453
2nd "	1,156	1,484	1,739	1,679	2,370	1,575	2,703	2,000	2,522	1,678	1,896
3rd "	1,381	1,833	1,976	2,225	2,938	2,031	3,088	2,313	2,789	2,048	2,513
					Colored						
1st Quartile	521	800	857	1,098	917	950	1,521	1,063	1,495	928	971
2nd "	650	983	1,367	1,295	1,667	1,450	2,125	1,438	1,938	1,188	1,390
3rd "	844	1,200	1,650	1,716	1,938	1,550	2,563	1,679	2,406	1,590	1,873
					Carbohydrate (Grams)						
					White						
1st Quartile	113	160	173	147	252	194	288	208	266	178	189
2nd "	139	200	218	243	296	232	353	245	326	230	256
3rd "	170	233	278	304	408	304	405	286	397	284	327
					Colored						
1st Quartile	76	117	134	167	163	156	203	122	209	121	138
2nd "	91	156	200	218	263	200	263	213	272	167	201
3rd "	117	175	247	304	296	241	379	241	361	227	275
					Total Proteins (Grams)						
					White						
1st Quartile	27	35	40	40	61	41	70	48	62	39	44
2nd "	37	48	56	54	83	46	86	63	79	53	60
3rd "	47	60	68	73	90	66	100	73	99	65	79
					Colored						
1st Quartile	15	23	29	33	42	33	51	31	48	30	32
2nd "	22	31	37	45	55	43	66	44	62	40	45
3rd "	31	38	47	61	83	49	75	57	80	54	62
					Fat (Grams)						
					White						
1st Quartile	31	51	52	52	68	43	91	61	76	50	53
2nd "	44	60	70	66	95	56	107	74	110	64	73
3rd "	58	73	85	92	123	68	134	88	127	79	102
					Colored						
1st Quartile	16	23	27	34	35	41	51	34	54	30	32
2nd "	23	30	42	46	50	48	68	50	62	41	47
3rd "	31	42	54	63	92	58	94	62	87	55	67

procedures are usually considered reliable in the assessment of nutrition. They are gross measures of nutrition in respect to calories, and although valuable in clinical practice are not generally considered reliable in the mass study of nutrition. We have included them, however, because the history of weight and changes in weight support other measures of energy nutrition and because the estimate of the subcutaneous tissue is the only objective measure of this same factor other than the weight of the subject, and, in children, certain other anthropometric measurements.

The lack of helpfulness of the history is shown by the results. Only 4 subjects gave a history of a tendency to obesity (1 colored adult female and 3 white adult females), and only 4 a history of a tendency to underweight (1 white male, 2 female adults and 1 colored girl in the age group 16–20). This despite the disclosure by examination and body weights of much obesity and underweight which had obviously existed a considerable time. Similarly only 8 subjects gave a history of abnormal recent loss of weight (3 white male adults, 1 white female adult, 1 colored man, and 3 colored women). *Only 1 colored subject* (female 16–20) gave a history of an abnormal increase. One white child (7–9), one white male (16–20), and a white woman reported an increase.

The estimate of the amount of subcutaneous tissue, however, proved surprisingly accurate in the cases in which a decrease was diagnosed. This diagnosis was made in about 10 per cent of the subjects. An abnormal decrease in subcutaneous tissue was noted in 99 of the subjects, and comparison of the actual recorded weights with the standard predicted weight for age, sex, and height showed a significant underweight in all but 5. Thus, the clinician's estimate of underweight was accurate in 95 of the 99 in which he made that diagnosis. However, many other subjects who were under their predicted weight were not so diagnosed by the examiner.

Analysis of the estimates of overweight and underweight from the amount of subcutaneous tissue (Table 13) shows that the findings conform in general to the abnormalities in mean weight shown in Table 6. In Table 13 what appears to be a significant sex difference should be noted. Of the 36 white males aged 13 or over, only 15 were adjudged overweight while 21 were thought to be underweight. Of the 86 white women of the same ages, 57 were judged overweight and only 29 underweight. The difference is even more striking in the Negroes. Five males were overweight and 8 underweight, while 33 females were overweight and only 6 underweight.

The weights of the subjects, which are the best objective measure of nutrition in respect to energy, are shown in

TABLE 13

Overweight and Underweight as Judged by the Clinical Estimate of the Subcutaneous Tissue

Age		*White*		*Colored*	
Years	*Sex*	*Overweight No.*	*Underweight No.*	*Overweight No.*	*Underweight No.*
1– 3	M–F	0	1	0	0
4– 6	M–F	0	1	0	3
7– 9	M–F	2	12	0	5
10–12	M–F	2	9	0	4
13–15	M	2	1	0	2
13–15	F	0	1	1	0
16–20	M	1	1	0	0
16–20	F	1	3	6	1
21+	M	12	19	5	6
21+	F	56	25	26	5

TABLE 14

Distribution of Weights According to Age, Sex and Race *

Weight	*1–3 Yrs.* † *M-F*	*4–6 Yrs. M-F*	*7–9 Yrs. M-F*	*10–12 Yrs. M-F*	*13–15 Yrs. M*	*13–15 Yrs. F*	*16–20 Yrs. M*	*16–20 Yrs. F*	*21+ Yrs. M*	*21+ Yrs. F*
					White					
Lowest Observed Weight	15	28	41	48	66	67	104	85	101	100
Mean Weight	27	40	55	75	106	97	143	116	156	138
Median Weight	29	39	54	73	104	103	140	117	154	132
Highest Observed Weight	39	60	76	123	145	138	231	144	277	256
Standard Error of Mean	0.94	1.04	0.89	2.39	5.35	4.69	4.22	2.77	1.94	2.20
Standard Deviation of Weights	5.61	6.85	7.2	16.9	23.3	19.9	24.6	14.9	27.2	31.8
					Colored					
Lowest Observed Weight	17	28	41	59	81	85	133	87	113	87
Mean Weight	26	42	55	79	110	109	151	128	152	144
Median Weight	26	38	55	76	105	107	149	125	149	134
Highest Observed Weight	36	74	80	104	144	155	183	182	219	248
Standard Error of Mean	0.96	2.29	1.88	2.6	5.0	5.44	2.8	5.08	2.06	4.03
Standard Deviation of Weights	5.49	11.2	9.05	14.3	19.3	20.3	12.5	25.4	19.99	37.4

* 25 Children under one year of age have been omitted
† M = Male; F = Female

Tables 6 and 14. In Table 6 the observed mean weight is compared with the predicted weight for mean height and mean age of the various age, sex, and race groups. Table 14 gives the distribution according to age, sex, and race with the highest and lowest observed weights, mean and median weights in each group, and the standard deviations. As can be seen in Table 6, in 8 of the 20 groups the observed mean weight was significantly less than the predicted, the deficit ranging from 5 lb. in the 7–9 and 10–12 colored children, to 14 in the 13–15 white females. The children, white and colored, from 1–6 years of age, the women both white and colored 21 years and over, and colored males and females 16–20 had mean weights equal to or greater than the predicted.

Still one other method for detecting an inadequate calorie intake remains, the x-ray examination of the skeletal system of children for evidence of delay in growth and maturation. These changes are not specific; delay or arrest in growth and maturation occur with other nutritional deficiencies, perhaps even more strikingly, as well as with other disease. Hence, such evidence is of value in a negative way only; if no interference with growth and maturation is found it is unlikely that nutritional deficiency, even a deficiency of calories of a significant degree, is present.

However, such abnormalities are measures of current nutrition only in earlier childhood when the developmental changes are sufficiently rapid to reflect current nutrition. Results of the x-ray will be reported later in analysis of all factors affecting the bones. Preliminary examination of the data shows little or no evidence of a deficiency of calories detected by this means.

Due to the extreme variability in the calorie requirements and the predicted weight of children less than one year of age, the data on this group are presented individually in Table 15. This group is composed of 11 white and 14 colored children ranging in age from 2 days through 11 months.

In the white group, 7 of the 11 children were partially or completely breast-fed. Since we were unable to quantitate this food, it is impossible to compare their calorie intakes with their needs. Only one child in this breast-fed group deviated strikingly from the predicted weight. This child was 4 lb. underweight in spite of the fact that, in addition to breast feedings, her accessory

TABLE 15

Calorie Intake and Weight of Children Less than One Year of Age

Age	Sex	Observed Daily Caloric Intake	Predicted * Caloric Intake	Length inches	Observed Weight lbs.	oz.	Predicted † Weight lbs	oz.	Nursing
				White					
2 days	M	...	300	21	.....		9		yes
1 month	M	...	360	26	.....		13		yes
4 months	M	15	700	26½	17	8	16		yes
4 "	M	...	700	..	17	4	..		unknown
5 "	M	685	750	30	16		22		no
6 "	F	703	790	28	18		19		no
6 "	F	263	790	26¼	17	14	16		yes
7 "	F	175	815	25½	16	8	16		yes
8 "	F	901	840	29	16		20		yes
9 "	M	500	860	..	..		..		unknown
11 "	M	350	900	27½	18	4	19		yes
				Colored					
2 weeks	M	...	400	19¾	8	6	8		unknown
1 month	M	...	360	23½	12		11	8	yes
2 months	F	...	525	24	11	12	12	8	yes
2 "	M	...	525	22	11		10	8	yes
2 "	M	808	525	..	.....		.....		no
2 "	M	600	525	..	.....		.....		yes
2 "	F	...	525	22½	9	8	10	8	yes
2 "	M	109	525	23½	12	8	11	8	yes
4 "	M	...	700	24½	16		14		yes
5 "	M	33	750	..	12		.....		yes
5 "	F	...	750	24½	14		14	8	unknown
6 "	M	82	790	25½	17		16		yes
8 "	M	157	840	27	14		18		yes
11 "	F	694	900	28	15		19		no

* From Holt and McIntosh, *Holt's Diseases of Infancy and Childhood*, D. Appleton-Century Co. Ed. 11, 1940.

† From table prepared by R. M. Woodbury for American Child Health Association.

feedings exceeded the calorie needs. Two individuals were not breast-fed, and both were receiving slightly less than their predicted calorie requirements (65 and 87 calorie deficit). One was found to be 6 lb. below the predicted weight and the other only 1 lb. below. The status of the 2 remaining white children is indefinite due to inadequate data.

Ten of the 14 colored children were known to be breast-fed. Of this group only one differed significantly from the predicted weight and was 4 lb. under this weight. Two children received no breast feedings. One received only 694 calories as compared to a predicted need of 900 calories. This individual was found to be 4 lb. underweight. The height and weight were not obtained on the other child who was not breast-fed. The complete dietary data on the remaining 2 colored children were not complete, but both were within 1 lb. of their predicted weight.

DISCUSSION

The data presented above seem to indicate a serious deficiency of calories (energy) in the diet of a large number of the population under study and the existence of a state of undernutrition in respect to this factor as disclosed by the body weight and the physical examination. All groups of the population except white children from 1 to 6 years of age were found by our records to have had a calorie intake significantly and often greatly below the recommended allowances of the Food and Nutrition Board. In certain groups the deficiency was as great as 45 per cent; only a little over half of the recommended number of calories daily were

consumed. These findings are supported by the existence of a significant degree of deficiency in the mean weights for many of the various groups of subjects and the finding of a considerable number of subjects with an abnormally small amount of subcutaneous tissue.

However, there are certain objections to a conclusion that there existed an undernutrition of this kind as frequent and as severe as appears from the data. In the first place, not all the groups had a less than predicted mean weight. Eight of the 20 groups had a mean weight equal to or greater than the predicted. Four of those groups were children, white and colored, 1–3 and 4–6. The others were colored males and females 16–20 and adult females of both races. Thus of these 8 groups, 5 were colored, the subjects who had the greatest apparent deficit of calories. Not only were the mean weights equal to predicted, but a very considerable number of the subjects were recorded as obese. Very few indeed reported losing weight or being underweight. Furthermore, it should be observed that the recorded calorie intakes in many instances are not only relatively but absolutely so low that their continuance for any but the shortest periods would seem inevitably to be followed by disabling loss of weight and strength. Many intakes are no greater than the content of reduction diets whose caloric value is calculated to be less than the basal requirements for " ideal " weight. Theoretically, on such diets the body weight should fall and the degree of activity be reduced until they reached levels which could be maintained by the energy supplied. On such diets as many of those indicated here, a disabling loss of weight and strength with a greatly limited activity would be expected. Yet, few if any of these subjects showed such symptoms, and many were not only of normal weight but were actually obese.

There are several possible explanations for this apparent inconsistency. The food intake records may be inaccurate. The standards or accepted requirements with which the actual intakes are compared may be too high. The subjects may have been so inactive as to need little more than basal requirements. None of these explanations alone seems adequate though a combination of them may be. The records of food intake admittedly have a large margin of error. However, energy is one of the nutritive factors more easy to measure and calculate accurately. The calorie values of food have been well studied and quite accurately determined. Foods high in calories are in general easy to measure and record. It is likely that in a study of this size errors occur in both directions, over and under, and tend to cancel out. Furthermore, it is unlikely that they would consistently be large enough to explain the discrepancies found. Even an error of 20 per cent in one direction would still leave many subjects gravely inadequate in the intake of calories.

It is admitted that the recommended allowances are not intended to indicate the minimum but are those which are believed adequate and necessary for good nutrition on practical diets. Many other standards of requirements have been proposed, some of which call for somewhat smaller allowances of the various factors. The standards of the Food and Nutrition Board of the National Research Council have been based on the most recent evidence. In view of the inability to determine the actual minima under all circumstances, they might be taken as a reasonable standard, a divergence from the standard being interpreted in a relative and quantitative fashion. Yet, in view of the evidence disclosed in this study, it may be questioned whether the recommended allowances have not been placed too high. In this connection it is of interest to note that the over-all average intake

of calories in Milam's[6] survey in North Carolina was 2,000 calories. Also, recent careful studies of the intake of a few individuals[6,7] have disclosed intakes considerably below the usually recommended allowances unaccompanied by body weight below the calculated ideal and even associated with weights above that level. For instance, a normal man of 48, of more than moderate activity, was found to consume a daily diet of some 2,000 calories (in contrast to a recommended allowance of 3,000 calories). Yet, on this apparently low intake he had trouble avoiding an increase in his weight which was almost exactly at the calculated ideal.

Because of the discrepancy between recorded calorie intakes, recommended allowances and body weight, the relation between basal requirements, recorded intakes (calories), and the body weight in relation to predicted "ideal" weight, was investigated in a representative 10 per cent sample selected at random. This revealed that as many as a third

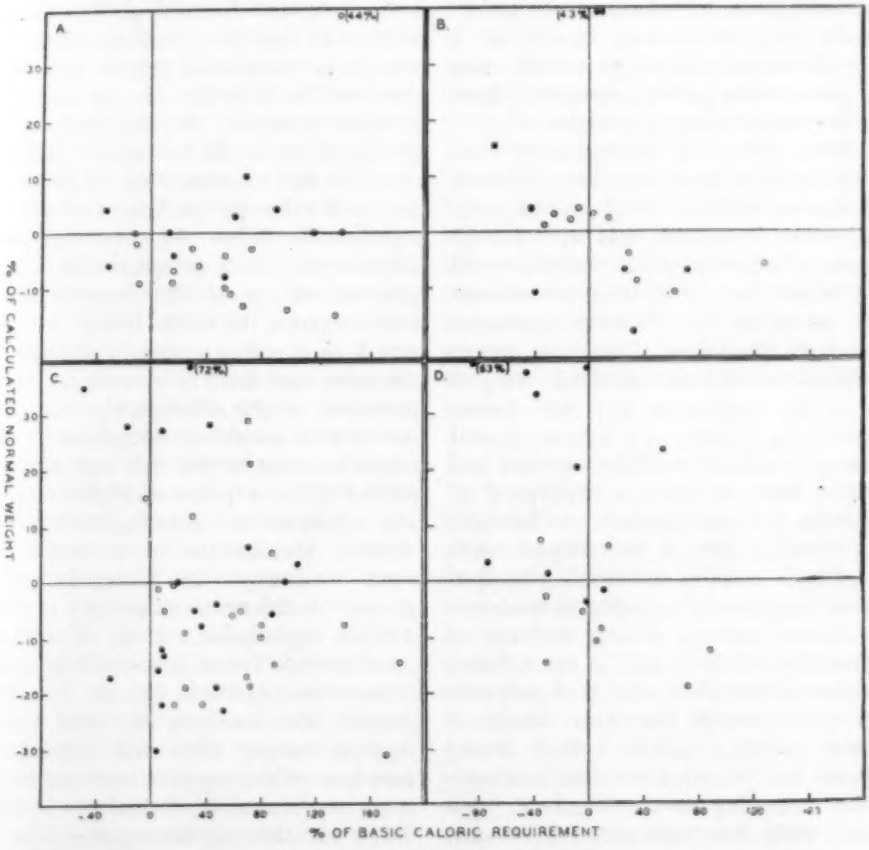

FIGURE 1—Graph showing the relation between calorie intake and weight of a representative sample selected at random (10 per cent). The horizontal axis represents calorie intake in per cent of basal requirements, the vertical axis the body weight in per cent of calculated "ideal" weight for height, sex and age. A. Children 1–9. Circles represent white; dots, colored subjects. B. Children 10–19. Circles represent white; dots, colored subjects. C. White adults 20 years and over, and D. Colored adults 20 years and over. Circles represent males; dots, females.

of the subjects recorded intakes less than 30 per cent above actual basal requirements as calculated on the basis of calories per square meter of body surface for age and sex. Several were below this basal requirement. Nevertheless, only a part of these subjects who were on such reduced intakes were as much as 20 per cent below their predicted "ideal" weight; many were over that weight, some by as much as 30 per cent. In Figure 1 these relationships are shown for each subject individually.

Perhaps, in view of the findings described above, the recommended allowances may have been based on a population more obese as a whole than is necessary or perhaps desirable. Ours is in general a lean population.

Some error has undoubtedly been introduced by using "moderate" as the degree of activity of all the subjects. However, it was felt that with a large group of a general population this would introduce less error than an attempt to determine by relatively inaccurate methods the degree of probable energy expenditure of each individual. In general, the population was not characterized by lethargy or a lack of physical energy, such as would be expected had there been as great a deficiency of calories as there appeared. As has been indicated, many of the subjects were employed in rural and farming occupations, continually engaging in moderate to heavy activity without evidence of disability. Others, such as the children, exhibited the usual activity of such subjects of average nutrition. Many of these subjects must have been among those who recorded deficient consumption according to the standards used and, while there were undoubtedly some who were lacking in energy and were functionally deficient, the number does not seem to have been greater than in any general population of this size.

One of the results of a deficiency in energy is a lowering of the basal metabolic rate and it might be suspected that this had occurred in those who failed to show any effect of what appear to be grossly deficient diets. However, such tests as have been made in this area fail to reveal significant evidence of such a depression and though some such effect is possible it seems unlikely that it can be the sole explanation for the lack of correspondence between body weight and the recorded calorie intake.

The best objective evidence of nutrition with respect to energy is the body weight. Examining the mean weights we find that the observed mean weights are equal to or greater than the predicted in 8 of the 20 age and sex groups of subjects. In only 2 of these groups, however, is the calorie intake equal to the recommended allowances. In the 6 other groups the calories are significantly below the recommended allowances. The 2 groups in which the calories are up to the recommended allowances are the white children 1 to 3 and 3 to 6. How colored children of the same ages were able to equal their predicted weight although significantly deficient in calories is unexplained. It might be thought that this was accomplished at the expense of a slower rate and attainment of growth, but this is unlikely because the mean height is equal to that of the whites in each group. A difference in activity is not a likely explanation. It is, of course, possible that errors in recording food intake were greater in the colored group. Two meals a day only were common among them and they may have more often forgotten to record food eaten between meals. In the 1 to 2 year olds a number may have gotten breast milk which was not included in the food consumed. All these conditions may have obtained in the whites too, but probably to a less degree than in the Negroes.

The white and colored females over

21 and colored girls 16–20, subjects whose mean weight was not below normal standards in spite of great deficiencies in calories, exhibited a considerable variation in body weight as revealed by the standard deviation. This variability, emphasizes the existence of considerable numbers of *obese* as well as greatly *underweight subjects* in the former groups, the value for mean weight representing the balance of these two extremes. This in turn suggests the existence of significant factors in calorie-weight relationship other than the supposed calorie requirement. It also suggests the possibility that such standards of requirements are incorrect.

Little of an unusual nature was found in the relative proportion of protein, carbohydrate, and fat in the diets, either in terms of grams, of calories, or as per cent of total calories. The proportion of fat as per cent of total calories is at the higher levels of the average range of such intakes while that of protein is in the lower range. Expressed in the same way, the proportions of fat in the case of the colored subjects are smaller than in the whites, reflecting perhaps the difference in incomes in the two groups in view of the characteristically high cost of fats. There is a corresponding increase in the proportion of carbohydrate but, curiously, instead of a decrease in the proportion of protein as might also be expected there is an actual increase in protein as per cent of total calories. This does not, however, signify a satisfactory or adequate intake of protein in the colored subjects. Rather the contrary is true as shown by the mean intake in grams which reveals inadequate intake in most groups. It is merely that the total calorie intake is so low that even inadequate amounts of protein constitute a higher proportion of calories than in the white group with their higher intake in grams.

An interesting feature is revealed by the median intakes of carbohydrate, fat, and protein which are significantly and characteristically greater in the males compared with the females in the 13–15, 16–20, and 21+ age groups. This difference is proportionately greatest in the case of protein in which a maximum difference of over 90 per cent is found between white boys and girls of 13–15. However, the age group at which the greatest difference is found varies according to the dietary element. For carbohydrate the greatest difference in the white subjects is between the males and females of 16–20. For fat it is greatest at the ages 13–15 and 21+. For protein it occurs at 13–15. Similar differences might perhaps exist in the younger years but at these ages the sexes have not been separated. In the Negroes somewhat the same differences are found but of a much smaller degree, reflecting, perhaps, the lower absolute levels of intake. Nevertheless for protein a very significant difference is found in most groups and only in the males at ages of 13–15, 16–20, and 21+ is the protein intake at a minimum satisfactory level.

SUMMARY AND CONCLUSION

The methods, procedures, and technics which have been used in a survey of the nutrition of a rural community in Middle Tennessee (Wilson County) have been described. The survey, which was conducted on a universe basis, included some 1,200 subjects of all ages and sexes, both white and colored, whose nutritional status was determined by a record of food intake, a history and physical examination, and various laboratory tests. The characteristics of the area and the population are given and the results of the survey as it relates to the energy factor (calories). The status of nutrition with regard to this factor was determined principally by the measurement of food consumption and the measurement of body weight

though such accessory indications as history of loss of weight, estimate of amount of subcutaneous tissue, etc., are included.

The findings reveal a moderate to severe deficiency (deficit) in energy (calorie) intake as measured and recorded, compared to the recommended allowances of the Food and Nutrition Board of the National Research Council. With this there was found a significant and often severe deficiency in mean body weight. Not all subjects were abnormally underweight however, even among those whose intakes appeared greatly deficient and many were actually obese. Reasons are given for suggesting that the deficiency of calories is not as great as it appears and that in part this may be because the recommended allowances with which the intakes have been compared are unnecessarily high. Errors in the recording of food intake may be responsible in part but cannot explain all the apparent deficiency.

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NOTE: This is the second section of the Survey. The first appeared in the December issue of the AMERICAN JOURNAL OF PUBLIC HEALTH

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IMPASSE IN PROCUREMENT AND ASSIGNMENT SERVICE?

IN the past few weeks newspapers and magazines have indicated a public interest in the shortage of physicians in some sections of the United States, and not long ago a Senatorial committee, as part of its man power deliberations, undertook hearings on this subject. From the tenor of published articles it is evident that there is criticism of what has been done in war utilization of physicians, of the way it has been done, and of those who have done it. There is, too, a general tendency to blame physicians as individuals and as groups, and to lay upon the Procurement and Assignment Service an ill-founded charge of lack of foresight.

Now, beyond a doubt, there is room for criticism; and one might well question the wisdom of appointing such a body, made up solely of professionals-at-interest and tied up with representatives of local, state, and national medical organizations as Procurement and Assignment Service seems to be. Still it is the instrument the Government chose and one must not lose sight of the excellence of what has been accomplished in difficult and complex circumstances. Thus it must be remembered that although Procurement and Assignment Service was appointed to meet the needs of the military services, of civilian practice and institutions, and of public health, in so far as these needs relate to the work of physicians, dentists, and veterinarians, *it was not invested with one iota of authority to compel service in any military capacity or civilian category or to say to the Army and Navy that they might have so many physicians and no more.* Yet in spite of this lack of authority, Procurement and Assignment Service has been able to meet the calls of military forces for about one out of every two physicians under 45 years of age. Inasmuch as only approximately one out of every five males of the general population in this age group has been called for military service, this is not a bad showing for physicians. As to whether or not that number of physicians is necessary for the military services is a question which Procurement and Assignment Service has had no right to answer. The military services asked for them and got them, and, under the terms of its appointment, Procurement and Assignment Service would have been subject to deserved criticism if they had not been furnished.

On the whole, that organization did not find it difficult to meet this call for medical officers. Physicians, in various proportions in the different parts of the nation, responded promptly, for there was the enticement of adventure, the glamor of a uniform, the urge of patriotism. But as the time approaches to arrange, as nearly as possible, for an equitable distribution of the physicians who remain in civilian practice, Procurement and Assignment Service's lack of authority becomes evident and its service less effective. In civilian medical service there is no glamor for the physician, no sense of adventure; no opportunity for decorations, and no basis for telling the son what Dad did in World War II. Nor would the physician, by such voluntary re-allocation, accumulate any backlog for post-war prestige and preferment. On the contrary, he would, after the war, be considered to have been a stay-at-home and, during the war, would invite a lowered income, irregular hours, and inadequate facilities. He would be forced, practically, to make a new start in life, with the old practice, built over a period of ten to thirty years, thrown into the laps of those who remained undislocated. He would be required, too, to pay last year's large taxes out of this year's shrunken income. It is not likely that in these circumstances physicians are going to volunteer for this unprofitable and gloryless sacrifice, and at present neither Procurement and Assignment nor any other agency may require them to do this.

And there the situation rests for the moment, with some axes being ground and some sparks flying. It is, obviously, only one part of the general man power problem, but even if all man power were drafted, which seems unlikely in the near future, problems inherent in allocation of physicians would vary somewhat from those of placing industrial workers: The latter would be sent to jobs; the former, to practices. The one would provide a definite wage; the other, an uncertain income. In the meantime, if the shortage of physicians in the United States as a whole, or in parts of it, is sufficiently serious to constitute an action-demanding national problem, certain provisions and arrangements would need to be considered. One of these is the possible necessity of vesting in some authority, which sees both military and civilian needs for physicians, the power to set an upper limit on the ratio of medical officers to the strength of the military forces and to establish a minimum ratio of physicians in practice per unit of population in civilian areas. Consideration, too, would have to be given to public health needs. Ratios would inevitably be lowered, perhaps in all categories, as the military forces grow, for, while Military Paul must be paid in physicians, there is a limit beyond which Peter Public may not be robbed for this purpose. A second thing deserving consideration is that this same agency—possibly Procurement and Assignment Service, broadened and freshened in all its ramifications by the infusion of a public perspective into its now essentially medical one—that this same agency would probably have to be given, finally, the authority to draft physicians for all purposes, drawing first on those communities where the ratio of physicians to population is high, physicians thus called being utilized to meet military necessities, public health demands, and medical service needs in the medically distressed areas.

Finally, in connection with civilian medical service, other practical provisions would have to be given thought: An administrative agency, salaries for physicians drafted into such duties, equipment, a mechanism for the collection of fees and the utilization and disposal of such fees—a thousand and one details. In keeping with our conviction that in both war and peace there should be but one operating health agency of the federal government, we recommend, for this administrative

function, the United States Public Health Service. And heaven help that Service if there is such a job, and the job falls to them, for it would be a thankless task, hectored, as the administrators would be, by ultra-conservatives on the one hand and exhorted by crackpots on the other.

As to whether or not it is necessary or wise to put any or all of these measures into effect depends, of course, upon the acuteness and extent of the problem. As regards a government-operated medical service, action should be taken only if the national emergency is serious enough to justify the institution of state medicine as supplementary to private practice.

EPIDEMIC KERATOCONJUNCTIVITIS

HEALTH officers, physicians in industry, ophthalmologists, public health nurses, especially those in industrial plants, and in fact public health workers in general would do well to go on an elert in regard to epidemic keratoconjunctivitis. Comparatively recently, this eye condition has made its appearance in various parts of the United States, particularly in large industrial plants, and in certain areas has interfered with production. The etiology, epidemiology, and treatment are not yet clearly cut, though definite progress is being made.

To the ordinary observer the condition is a severe conjunctivitis, beginning in one eye and not infrequently involving the other. There is but little pus though considerable lacrimation, with edema and congestion of the lids and conjunctiva. Usually the preauricular gland on the affected side is painful and enlarged. More characteristic of keratoconjunctivitis, and of serious import, is the fact that in the majority of cases there are corneal opacities. These are not difficult to demonstrate with the slit lamp. They result in some current impairment of vision and, although a fairly high proportion clear up, in an indeterminate number of instances the opacities remain long after the acute condition has disappeared. The question of their permanency is one which cannot at the moment be answered.

Sufficient work has been done to indicate that the organisms ordinarily causing conjunctivitis are not responsible for this apparently new disease. Sanders, of the College of Physicians and Surgeons, Columbia University, who reports the recovery of a virus from cases of epidemic keratoconjunctivitis, has carried it through tissue culture and continued it in mice. On neutralization tests against this virus, sera of patients affected with the disease have evidenced a rising antibody content as the disease passes its acute phase and enters into the convalescent period.

How the disease is transmitted remains in the field of speculation. Inasmuch as a fairly high proportion of cases have occurred in persons such as welders and mechanics, whose work may expose them to eye injury, there is a suspicion that a foreign body in the eye, or previous eye irritation may act as a contributing factor. It has been suggested, too, that the high proportion of cases seen in eye injury is due to the fact that the ophthalmologist's hands have become infected from some unrecognized case and that the irritated eye is subject to infection when a normal eye would not be; and there is some evidence which indicates that if an eye clinic has one such case, it is likely to have a number of others. As against this previous-injury and infection-at-eye-clinic hypothesis, is the observation that many cases occur in office workers, or occasionally in housewives, where

there has been neither eye injury nor visits to an eye clinic. There seems to be no difference in the attack rate in males and females when calculations are made on the basis of persons at risk. However, in any given epidemic, there are likely to be more males than females because in most industrial plants men predominate.

As indicated in a letter published elsewhere, the Neurotropic Virus Committee of the Army is interested in this condition, and physicians who encounter cases or suspected cases are urged to report them to the local health officer who, in turn, should advise the state health department. The latter may obtain the aid of the Virus Committee, which would not only insure careful study of the condition, but also sound advice as to the best known control measures. It is rather serious to advocate the isolation of five hundred to a thousand individuals engaged in war work, when in the majority of instances they are able to carry on to some extent. On the other hand, there is reason to believe that if the first few cases are promptly and rigidly isolated, and if auxiliary measures are instituted, a serious outbreak may be prevented. Auxiliary measures consist in an intensive search for missed cases and in scrupulous disinfection of hands and instruments in the eye clinic. In treatment, various measures have been advocated. These vary from cold compresses to sulfathiazole ointment. None is specific.

Here is a problem which will test not only the ingenuity, but the research and control potentialities of many who are interested in or responsible for the public health.

LETTER TO THE EDITOR

TO THE EDITOR:

Among some of the growing problems, which have confronted both health officers and industrial physicians in this country during the past year, has been that of epidemic keratoconjunctivitis—called by some "ship-yard conjunctivitis." The disease is apparently new to this country but it has appeared in epidemic form, both on the West Coast, and in the East (and perhaps elsewhere) during the short space of a few months. During this period, however, much has been learned—to which recent articles by Hogan and Crawford [1] and by Sanders [2] testify. This information is not general as yet and apparently epidemic situations can develop insidiously in factories before the nature of the conjunctivitis in its potential seriousness is recognized.

To my knowledge the disease is not reportable in this country and because of this and other obvious reasons it seems wise to bring it to the attention of your JOURNAL. It is earnestly requested that if new outbreaks, or suspected outbreaks, of this disease (epidemic keratoconjunctivitis) should occur, notification of this fact be made to Dr. Murray Sanders (Department of Bacteriology, College of Physicians and Surgeons, 620 West 168th St., New York, N. Y.). Dr. Sanders has been assigned by the Board for the Investigation of Epidemic Diseases in the U. S. Army to study this problem and to assist in the control of this disease.

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JOHN R. PAUL
Director, Commission on Neurotropic Virus Diseases, Board for the Investigation and Control of Influenza and Other Epidemic Diseases in the United States Army

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D. B. Armstrong, M.D., and John Lentz, M.S.

A DAY OF HEALTH EDUCATION

Any meeting of professional workers that succeeds in imparting to the participants an increased appreciation of the value, the usefulness, and the timeliness of their efforts is decidely worth while. This was achieved at the Annual Health Education Conference, held in New York City on November 17, 1942, under the auspices of the New York Academy of Medicine. The recent conference marked the third time in as many years that health educators representing the official and voluntary health, medical, and social agencies in the Metropolitan area foregathered as guests of the Academy to " review the objectives of health education and to plot a straight course toward them." The basic theme of the 1942 Conference dealt with the intensive wartime industrialization of the nation's communities and the health implications involved. Five timely and thought provoking papers were presented upon this thesis in which the problems of nutrition, physical and mental disease, and accidents were considered. Each speaker succeeded in giving a very clear concept of the wartime health problems of industry, from the angle of health education, and their conclusions were a decided stimulus to further thinking and current program planning.

The opening or " theme address " was delivered by Cassius Watson, M.D., Medical Director of the American Telephone and Telegraph Company. This valuable presentation emphasized the importance of occupational disease and industrial hazards in relation to the successful pursuit of the war effort. Dr. Watson called for an extension of immunization procedures among the working population and directed attention to two factors that loom large in the efficient operation of industrial establishments—fatigue and the emotional instability of employees. The speaker also discussed the value of thorough pre-placement physical examinations and the need for focusing our efforts upon certain diseases that are becoming increasingly threatening, notably brucellosis. Dr. Watson clearly outlined those elements in the health program that demand priority rating while the nation is at war.

Otto A. Bessey, Ph.D., Director of the Public Health Research Institute of the City of New York, contributed a practical and illuminating paper entitled " Food and Nutrition in the Home and the Work Place." This paper stressed the magnitude of the problem of poor nutrition and outlined methods by which this problem is being met in various places. Among other topics covered in Dr. Bessey's discussion were the importance of employing a trained nutritionist to direct feeding in plants and schools, the necessity for providing an adequate amount of time for lunch, and the increasing recognition being given to in-between-meal feeding and its effect on the efficiency of the worker. The speaker warned the audience to keep its sense of values during the current " nutrition boom " and to turn a deaf ear to

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promoters of food preparations and enthusiastic groups given to exaggerations and elaborate claims. Dr. Bessey also directed a critical dart toward food caterers who ply their wares for profit with little regard for or appreciation of good nutrition. The preparation of home-packed lunches for working men was cited as one element in the better nutrition program upon which education is needed. It was stated that 90 per cent of the food consumed in industrial plants is home prepared and packed in lunch boxes. One important recommendation made by Dr. Bessey was that the nutritionist employed in plants should work in collaboration with the medical division.

"Disease and Handicap Detection and Control in Industry" was the subject of a paper presented by Leonard Greenburg, M.D., Executive Director of the Division of Industrial Hygiene of the New York State Department of Labor. This highly pertinent contribution included a consideration of absenteeism and the diseases chiefly responsible for loss of time: respiratory infections, digestive disorders, and others. The problem of physical defects as a cause of rejection for industrial employment was also explored by the speaker. Dr. Greenburg pointed to the urgent need for programs of rehabilitation—"a need that is important in times of peace as well as in times of war." It was the contention of the speaker that voluntary health agencies can and must assume a major rôle in helping, through education, to control the problem of disease in industry. Dr. Greenburg's presentation was decidedly challenging.

A paper by Lydia G. Giberson, M.D., Psychiatrist of the Home Office Medical Staff of the Metropolitan Life Insurance Company, was devoted to the subject: "Mental Problems and Morale in Industry." The relation of the mental state of employees to the maintenance of industrial production was convincingly demonstrated in this direct and practical analysis, which included a discussion of various neurological conditions, psychoneuroses, maladjustments, and the "twin scourges" of industry—absenteeism and fatigue. It was abundantly evident that the type of industrial psychiatry advocated by Dr. Giberson — essentially educational in character—can go a long way toward solving the problem of effectively utilizing maladjusted individuals in industry.

The final address of the Conference was delivered by Harold R. Bixler, Director and Member of the Executive Committee of the National Safety Council. Mr. Bixler's paper was entitled "Educational Methods and Control of Accidents in Industry." Following a general discussion of the magnitude of the industrial and home accident toll, the speaker outlined ways and means of "selling safety" to management and employees on the basis of patriotic, economic, and humanitarian appeals. Among the specific educational measures advocated for the promotion of safety were: job training, conferences, contests, campaigns, awards, and so-called safety stunts. Mr. Bixler's recommendations were practical and could readily be adapted in any program looking to permanent and effective safety promotion.

The presentation of the various papers was followed by an open discussion, and a general summary of the day's proceedings was excellently outlined by Iago Galdston, M.D., Executive Secretary of the Medical Information Bureau of the New York Academy of Medicine. One of Credit Lines' editors (D. B. A.) presided throughout the meeting.

The Academy and its Committee on Medical Information deserve the thanks and appreciation of all in attendance at this well organized and stimulating meeting. It is hoped that the papers presented—all of which were marked by wise and timely counsel—will be made available later in printed form.

They should help the health agencies to adapt their current programs to pressing wartime needs and opportunities for service.

A selection of papers delivered at the 1941 Health Education Conference has recently been published in book form under the title: "A Venture in Public Health Integration." Copies are available from Columbia University Press at a cost of *$1.00* each.

NOTES ON RECENT HEALTH PUBLICATIONS

The volume of health education materials reaching the editors of this section of the JOURNAL has markedly decreased during recent months. Perhaps fewer booklets and other publicity items are being produced as agencies suffer the loss of personnel—or perhaps health departments are devoting their energies to more pressing needs in the field. Regardless of the cause, we are glad to say that the diminution in volume has in no way been accompanied by a diminution in the quality of the printed materials received. We have, for instance, just reviewed with interest and admiration the following publications:

1. A series of leaflets on tuberculosis, published by the Medical Department of the Westinghouse Electric and Manufacturing Company. Eight leaflets have been developed on the subject covering diagnostic procedures, signs and symptoms of the disease, methods of transmission, protective measures, nutrition in relation to recovery, treatment of the disease, and the possible increase in mortality from tuberculosis due to war conditions. These leaflets have many attractive aspects. The text of each is forthright, though certain statements here and there would perhaps be questioned by some authorities. Details of color, layout, illustration, and composition have all been thoughtfully and skillfully handled. It strikes us that the idea of breaking up the subject matter into short leaflets is an interesting departure from the usual practice of presenting the subject as a whole within the scope of a single publication. According to the Westinghouse plan, these leaflets are to be distributed to employees at two week intervals. Will readers gain more by way of this "installment plan" or would a "massive dose" of information be more practical? It would be interesting to know how the employees respond. We recommend this excellent series and commend the enterprise of the commercial organization responsible for them. Copies of the leaflets may be secured from the Westinghouse Medical Department, East Pittsburgh, Pa.

2. The sixth number of the U. S. Public Health Service Workers' Health Series bears the title "Bill Gets the Works." This is a remarkably clever interpretation of the procedures involved in a physical examination and is easily the best of the Workers' Health Series produced so far. Written in a popular conversational style, this booklet will convince employees of the importance of physical examinations and will dispel the impression that "a check-up is just one of those things that the plant 'Doc' has to do to earn his pay." The simple illustrations are "just right" and help to make this a consistently amusing and instructive publication. Copies of "Bill Gets the Works" are available from the Superintendent of Documents, Washington, D. C., at a cost of *5 cents* each.

3. Workers in the field of safety education are assuredly attuned to the times—ample evidence of which is seen in a booklet issued by the Greater New York Safety Council entitled, "You and Your Horse." Since many companies have parked their delivery trucks for the duration and replaced them with horse-drawn vehicles, it is well to have authoritative advice available on how to "care for your horse and operate your

wagon safely." Even if you are not faced with a return to horse and buggy transportation, you will thoroughly enjoy reading this booklet which includes among its contents information on such subjects as how to tether your horse, how to make him "back up," how to handle nervous horses, and how to apply auxiliary halters. "Whoa, Dan"—while we tell our readers that this booklet is available from the organization mentioned above, 60 East 42nd Street, New York, N. Y., at *5 cents* per copy. "Giddap, Dan."

4. Excluding the usual syndicated health columns, newspapers—with a few notable exceptions—are not given to featuring health news. Occasionally, however, special supplements on the subject are published jointly by health or medical agencies and newspapers. With the current emphasis on physical fitness, it is surprising that these supplements do not appear more frequently. An unusually good example of this type of publicity was sponsored recently by the Philadelphia County Medical Society and the *Philadelphia Record*. In twenty pages of tabloid size, the cartoon-strip technic is used to popularize first aid procedures, accident prevention, nutrition, communicable disease control, and personal hygiene. This supplement has considerable "reader interest" chiefly because it avoids the essay or feature story method of presenting health information and utilizes instead the simple, to-the-point approach that is inherent in the cartoon medium. The execution of the drawings and the authentic captions accompanying them show that this supplement was painstakingly worked out. Any health educator armed with a copy of this supplement could no doubt readily convince local editors to undertake a similar venture. Copies of the supplement may be had by writing the Philadelphia County Medical Society, Philadelphia, Pa. We compliment the Public Relations Committee of the Society and the staff of the *Philadelphia Record* upon rendering a helpful service to the people of the community.

5. Another effective health agency-newspaper venture was sponsored a short time ago by the Public Health Federation of Cincinnati and the *Cincinnati Post*. This consisted of a series of twenty-five articles admonishing citizens to "Be a Health Warden." The series was keyed to the theme that many local doctors are entering the armed services and that individuals must assume responsibility for safeguarding their health. Some of the titles in the Health Warden Series were: Let Your Heart Speak, Show Your Teeth, The Art of Blowing Your Nose, and Babies and Battles. It is reported that the series was enthusiastically received by readers of the *Post*.

6. From the Harlem Tuberculosis and Health Committee of the New York Tuberculosis and Health Association comes a historical report entitled "Twenty Years of Community Health Work." This statement recounts the activities of the committee year by year, and one finds in it an inspiring record of service on behalf of the people of Harlem. The report is conveniently organized and written in an earnest and direct style. Of especial interest is the cover which bears a well balanced type arrangement and an arresting illustration. Copies may be secured from the New York Tuberculosis and Health Association, 386 Fourth Avenue, New York, N. Y.

7. An "A-B-C" interpretation of the Kenny Technic may be gained by reading a folder issued by the National Foundation for Infantile Paralysis under the title, "Principles of the Kenny Method of Treatment of Infantile Paralysis." By listing only the essential facts underlying this form of therapy and by including a few simplified drawings, this publication does an excellent

job of simplification. It should be particularly useful in explaining the Kenny Technic to lay groups. Write to the Foundation at 120 Broadway, New York, N. Y., for copies.

8. The American Social Hygiene Association has sounded its call to the public to enlist in the fight against syphilis and gonorrhea on Social Hygiene Day, February 3, 1943. A neat, well planned folder with the heading "Social Hygiene Takes Battle Stations," outlines various activities that may be undertaken to rally support and to inform the American people about the dangers of venereal disease. The Association suggests many ways of obtaining publicity and will furnish prepared talks, films, literature, exhibits, radio material, and other publicity aids for use in connection with Social Hygiene Day. The Association's publicity staff is certainly adept at preparing lively and informative promotional materials.

POSTERS WITH "PUNCH"

Here we go again on what must appear to be our favorite subject for comment—posters. This medium was never more popular than now: witness the contests that are sponsored, the exhibits that are held, and the financial grants that are made—all for the purpose of stimulating artists to sharpen their technics, to create posters with a "punch." Here, then, are a few more observations on the subject:

"A poster is a form of commercial art—it has something to sell—and its style must be determined by that plain fact. In designing a poster, remember that it must get its idea across in the time that it takes an express train to pass a water tank. It is not meant to be hung on a wall and admired at leisure, or to serve as an illustration in a magazine. And so it cannot afford to flirt with modernistic or abstract effects. It must say what it has to say all at once, right now, and all in the foreground where the eye can take it in at a glance. Consequently, the successful poster presents a few, carefully chosen words and objects held close to the front plane rather than receding into the background where the quickly passing eye cannot possibly follow. For the same reason, colors must be used in large areas rather than in small details—which is why a good poster looks almost as well in a black and white reproduction as in its original form."

With these facts in mind, we turn to two sets of posters on the venereal diseases—one of which comes from the Venereal Disease Control Officer of the Third Naval District, Lieut. Commander M. Wishengard; the other from the American Social Hygiene Association. The Navy has developed thirteen posters dealing with the prevention and treatment of syphilis and gonorrhea. The art work of each is simple—there are no illustrations aside from decorative border designs in which certain Naval symbols—anchors, ships, ropes, waves, and the like—are reproduced. Two or three colors are used in each poster and they have been selected so as to achieve the most effective combination of tones and hues. The text of each poster is compact and forceful. It was pleasing to find that there was no straining to clutter up these messages with the overworked military motif. In sum, these posters are unusually well done—artistically and textually.

The American Social Hygiene Association has produced six venereal disease posters for display in industrial plants. They measure 11 by 14 inches and are reproduced in two colors. The copy of each is appropriately brief and the illustrations are pleasing. These posters should amply fill the bill for they are admirably done in a style that should appeal to the man behind the machine. Write to the Association at 1790 Broadway, New York, N. Y.—*50 cents* per set.

Incidentally, we learn that one agency

that has issued many venereal disease posters in which the symbolic motif has prevailed has now discarded this approach and will henceforth revert to "true and literal representations." Why? Because the bulk of the population did not understand symbolic designs.

AN EDITORIALETTE:

HEALTH EDUCATION'S PART IN WINNING THE WAR

The public health profession of America has never faced a greater challenge than today. Any war brings public health problems of enormous variety and magnitude. War, famine, pestilence, and death are still inseparable companions. But this war far exceeds all others in its public health implications.

Wars are not won conclusively by conquering armies or by invading homelands. They are won finally by destroying the will of the conquered peoples to fight back. No better implements for this purpose exist than malnutrition, tuberculosis, the ravages of epidemic disease.

It is the heavy responsibility of the public health profession to guard the health of the workers at home so that their efficiency may be kept at a maximum, to protect the entire population from loss of stamina through manifest illness or lack of robust health, and to protect the armed forces from exposure to health hazards outside the boundaries of their cantonments and from worry over the health of their families at home.

This is a large order under existing circumstances. It is an order, the filling of which will require more health education than ever before.

Since the objective of health education is to improve health behavior, and since so much preventable illness and premature death in this country today is a result of improper health behavior and incorrect health attitudes, health educators share as largely as any other branch of the public health profession the heavy responsibilities of helping to win the war on the home front.

Our responsibilities are graver today and heavier than ever before. We must prevent in this nation, if we can, some of the underlying causes of defeat in any nation; to remedy, so far as we can, some of the reasons for defective health behavior in this nation; and to solve, so far as is within the power of our most earnest efforts, some of the problems confronting all health educators.

One of the greatest of these problems has been the confusion which exists with respect to the values and technics of modern education when applied to the field of public health. Stemming as it does from the engineering, medical, and related professions, public health has been slow to appreciate fully the potential contributions of education. Education too has been slow in developing health teaching methods and accepting the importance of health teaching as one of its primary objectives. Between the two professions of public health and education has been the barrier of differing professional "lingo." This barrier has at times assumed the characteristics of an insulating double brick wall. But a few hardy souls in each profession have had the courage and patience to run around the barrier, listening and asking questions of the other group and returning to their own group with gems of wisdom interpreted in their own language. Soon the curiosity of each group was aroused and we now find educators being invited to advise with public health officials and health officers being invited to advise with educators. It would seem that this age-old barrier is about to be breached.

One of the most significant steps toward clearing confusion in the field of public health education is the emergence of a report from the APHA Committee on Professional Education on the educational qualifications of health educa-

tors. This committee has described clearly and briefly the values of health education both in schools and health agencies. Most important of all, perhaps, it has concluded that health educators, whether employed by schools or health departments or both, are essentially educators and need full training in both education and public health. Finally, it has listed the academic training which seems most desirable for professional preparation in this important field. This report will soon be ready for publication in its preliminary form in the JOURNAL.

Meanwhile, the professionalization of health education has already been advanced immeasurably through the efforts of this committee. It has distinguished between health education, information, and propaganda. It has defined the proper place of publicity in health education. It has shown the health officer how he may use the skilled health educators to the best advantage. It has formed the basis of a merit system examination for some state departments of health.

Health educators must play an important part in winning the war. This is a cause even greater than we have faced before. It permits no trifling. Confusion as to the status, functions, and training of health educators is being reduced by an increasing rapport between the two great professions of education and public health. A great advance will be made when educators and public health authorities can agree on the functions, responsibilities, values, and training of those professional people who wish to devote themselves to the field of health education.

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This editorialette was contributed by William P. Shepard, M.D., Assistant Secretary and Pacific Coast Welfare Director of the Metropolitan Life Insurance Company. It is based on Dr. Shepard's remarks at the opening session of the 1942 Health Education Institute. We are grateful to Dr. Shepard for his fresh and penetrating appraisal of the rôle of health education in world affairs.

MAGAZINE ARTICLES AND BOOKS

Recent popular magazine articles on health or of medical import:

"Heart Disease and You." Peter J. Steincohn, M. D. *The American Mercury*. December, 1942.

"Protect Your Family from T.B." Edwin R. Levine, M.D. *Parents' Magazine*. December, 1942.

"Hemorrhoids." Maxine Davis. *Good Housekeeping*. December, 1942.

"Animals as Allies." Priscilla Jaquith. *Coronet*. December, 1942.

"What You Don't Know Won't Hurt You." Richard Wright. *Harpers Magazine*. December, 1942.

"The Biologist Looks at Man." By Julian Huxley. *Fortune Magazine*. December, 1942.

"Quick Repairs for Broken Bones." Elsie McCormick. *The Reader's Digest*. December, 1942.

(The above is not presented as a complete list and the articles cited are not necessarily recommended.)

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Current publishers' lists are replete with books with a medical or health flavor. They range from novels and humorous essays to the more scientific type of statement. As our readers may wish to buy or borrow some of these books, we give you herewith titles, authors, publishers, prices, and brief "quotes" concerning each:

Big Doc's Girl (a novel). By Mary Medearis. Published by J. B. Lippincott Company, $2. "A chronicle of a small-town doctor and his family—has freshness and a thoroughly genuine quality."

Insides Out. By John Mason Brown. Published by Dodd, Mead and Com-

pany, $2. "Anyone who has done time in a hospital will enjoy this laugh provoking book about surgery, doctors, nurses, visitors, pills, and needles."

The Art of the Healer. By Bernard Aschner, M.D. Published by the Dial Press, $2.75. "Concerns a new system of medicine—constitutional therapy—which the author hopes may endow the healing art with new powers."

Science in Progress. Edited by George A. Baitsell. Published by Yale University Press, $3. "Reports the latest developments in several fields of science, including medicine."

How To Be Fit. By Robert Kiphuth. Published by Yale University Press, $2. "Shows how to get into 'fighting trim' in a few short weeks."

The Microbe's Challenge. By Frederick Eberson. Published by the Jaques Cattell Press, $3.50. "Timely information for the average reader on home-front killers—flu, infantile paralysis, plague."

Adventure in Blood Transfusion. By Bertram M. Bernheim, M.D. Published by Smith and Durrell, Inc., $2.50. "The wondrous story of a great surgical achievement."

Silent Enemies. By Justina Hill, M.D. Published by G. P. Putnam's Sons, $2.50. "'The story of the diseases of war and their control."

Love Against Hate. By Karl Menninger, M.D. Published by Harcourt, Brace and Company, $3.50. "An analysis of the war of emotions within the human being."

Memoirs of a Guinea Pig. By Howard Vincent O'Brien. Published by G. P. Putnam's Sons, $2. "For everyone who has been to a doctor, knows one, or is one."

JOTTINGS

A statement worthy of prolonged applause: "An author who writes of scientific matters for the public has a twofold obligation: accuracy and truth must not be distorted; the reader must not be misled by unconfirmed information. Such writings should be ruthlessly criticised by experts long before the type is set." (Justina Hill, M.D., Johns Hopkins School of Medicine.) Certain popular articles published lately have flouted these desirable principles. . . . Historical note: The first American newspaper, the short-lived Boston *Publick Occurrences*, carried in its first issue, dated September 25, 1690, two paragraphs of health news. The comments concerned the smallpox epidemic in Boston. . . . Slips that pass in the night: Copies of a first aid handbook were recently distributed with this errata note attached—"Please open your copy at page 58 and strike out the words 'tincture of iodine (2%).' This is an editorial error; it should read 'calamine lotion.'" . . . We are glad to learn that the Executive Board of the A.P.H.A. has authorized the appointment of a Committee on Accidents which will be concerned with industrial, home, farm, and public accidents. Personnel of this committee will be announced later by the Committee on Administrative Practice. This step is of especial interest to health educators, inasmuch as it will open new fields for using educational technics. The new committee is expected to work in close collaboration with the Home Safety Advisory Committee of the National Safety Council. . . . As a contribution to the national nutrition program, the Aetna Life Insurance Company has released a two-reel film entitled "Vitality for Victory" in which the normal nutritional needs of industrial workers and other groups are stressed. . . . *The Lancet*, British medical journal, ever a source of inspiration, pays this tribute to public health nurses: "Let us now praise District Nurses and the Committees that begat them, for they are daughters to the aged, mothers to the motherless, sisters to them in labour, whose hands, holy but sterile, heal the

sores of the outcast and the blains that have broken, clip the beards of the ancients and the nails of them who cannot bend or see, who perform the task of the menial and are paid with the thanks of the lowly and the privilege of service, who come like sun to the prisoned and song to the cottage, who bring the news of the village and the jest of the market, and bear a message from one who is sick to another, who ease the way of the dying and the crown of the baby, who watch the going of life with stertorous gliding and its coming with bulge and recession, oft keeping vigil by candle, who must walk in men's ways alone, warily treading between the footmarks of gossip, the ruts of malice and the paths of the partisan, who oft see the dawn of a day, but know not the labours it's bringing. O apostles of soap and sanity, O black-bagged friars of country lanes, Angels on Pushbikes, I salute you, District Nurses!" . . . An excellent paper entitled "The Use of Radio in Health Education" was recently presented before the Annual Institute for Education by Radio. David Resnick, publicity director of the National Society for the Prevention of Blindness, spoke on this topic. His talk is an interesting and informative analysis of what is being done through radio in the health education field—including references to the broadcasts sponsored by the American Medical Association, the New York Academy of Medicine, and other leading agencies. Mr. Resnick lays stress upon the importance of having health broadcasters work more closely with radio experts in planning health talks for radio audiences. He also analyzes the actual and potential effect of the war situation on the use of radio time by voluntary organizations in the health field. Copies of Mr. Resnick's address may be obtained by writing to the Society at 1790 Broadway, New York, N. Y. . . . Many interesting health education projects are being worked out by United China Relief—including the formulation of a basic language for the dissemination of medical and health information. . . . The American Academy of Pediatrics has set up a special committee to establish standards which should be met by all physicians engaged in child health services. . . . A quotation from Surgeon General Parran: "Public health will be the spearhead for future international agreements."

BOOKS AND REPORTS

History of the School of Nursing of the Presbyterian Hospital, New York 1892–1942—*By Eleanor Lee, A.B., R.N., Assistant Professor of Nursing, Department of Nursing, College of Physicians and Surgeons, Columbia University. New York: Putnam,* 1942. 286 pp. Price, $3.50.

Cherished by its graduates as the embodiment of their accomplishments and traditions, this book will also be cherished by nurses everywhere as a history of nursing in its broadest and deepest sense. Herself a teacher of nursing history, the author has made a contribution which will be welcomed by other teachers and students of this subject.

A remarkable feature of the book is the author's success in tying up the history of a great institution, and the biography of certain leaders in nursing, with that of the profession as a whole; with the development of medicine and public health; with the civic and social growth of the community which it serves. Historical facts are interspersed with choice bits of reminiscence such as are usually scattered about in minutes, in note books and training school records, and in the minds of older members. These have been painstakingly assembled and delightfully presented. To the younger nurse, they give a vivid picture of an earlier period against which to place her own opportunities and experiences. The older nurse is sent back to the good old days with the feeling that the diary of 1897 must have been her very own.

The history of the school naturally divides itself into two periods, that under the guidance of Miss Maxwell and that under Miss Young. While the lengthened shadows of these two are constantly visible, the contributions of others have been given individual mention and consideration. One is also conscious of the understanding and staunch support of the medical staff and the board of governors, whose part is seen in every undertaking of the school and in every related movement.

Without attempting to describe in full the contents of the book, some features of special interest may be noted. For instance, in the development of the curriculum, changes have taken place only after careful study of the situation elsewhere and in line with sound principles clearly stated and practically followed. In the words of Miss Maxwell "We must note the signs of the times, keep abreast of modern thought and make the conditions and equipment of this school the best in the country." The progressive steps taken in pursuance of these aims are clearly indicated. These gradually resulted in affiliations with Columbia University until in 1935 the School of Nursing became the Department of Nursing under the faculty of the School of Medicine.

Interesting reading are the chapters on the Alumnae Association and on Visiting Nursing and Social Service. Most thrilling of all perhaps is the record of service in three wars. It was to this school that the American Red Cross turned, in the Spanish-American War, for a leader to establish the first group of trained nurses in an army camp in this country. In this undertaking, Miss Maxwell was joined by others of her staff. The record established at that time was carried forward into the first world war and the present conflict.

In addition to the history proper there is a chronological list of events,

and an appendix containing much valuable material. The excellent set-up with its numerous illustrations adds to the value and charm of the book. We venture to predict that in future annals of the school this volume will be counted as one of its great achievements.

HARRIET FROST

Why We Have Automobile Accidents—*By Harry R. De Silva. New York: Wiley,* 1942. 394 pp. Price, $4.00.

Reasons why health officers should be interested in the automobile accident problem have been brought out in meetings of the American Public Health Association. In this book, De Silva summarizes in interesting fashion the information on this subject which is available at the present time. While recognizing that numerous factors enter to complicate the problem, for example, the road, the car, and the pedestrian, the author emphasizes the predominant rôle played by the driver. Accordingly we find among the sixteen chapters of the book, such subjects as the following: skill; safety-mindedness; speed; incompetent drivers; training and examining drivers; and control of licensed drivers.

An abundance of statistical material is cited which, as in most discussions of automobile accidents, is rather inadequate. The trouble is the lack of information on such factors as the populations and mileages subjected to specific risks, e.g., at different hours of travel, different kinds of roads, etc. The health officer would be in a comparable predicament if, for example, he could not compare the white and Negro death *rates* from tuberculosis, but only the deaths, because the exposed white and Negro populations were unknown. The paucity of information on population exposed to risk is recognized by De Silva and other writers; but one sometimes wonders whether, with more liberal employment of index numbers, better use could not be made of such traffic data as are available.

There are informing chapters at the end of the book on preventive programs, and the administrative problems underlying these.

All in all, this is an important book. It should be read widely.

A. W. HEDRICH

Psychology Applied to Nursing—*By Lawrence Augustus Averill, and Florence C. Kempf. (2nd ed.) Philadelphia: Saunders,* 1942. 455 pp. Price, $2.50.

The first reaction of most nurse educators to textbooks on specialized subjects "applied to nursing" is: What has been left out or written down in order to make this material apply to the field of nursing?

Undoubtedly, a selection and adaptation of subject matter from the field of psychology are desirable in teaching student nurses, but to this reviewer such a textbook is a sorry compromise for a well qualified instructor who is a specialist in this field and who works with the other faculty members in the school of nursing to enrich the psychological content of the whole curriculum. As one reads these chapters, he is also struck by the fact that the same goal might be attained by offering student nurses an elementary course in general psychology with applications in the ward and clinical experiences under the guidance of a qualified consultant psychologist.

The revised edition of the original textbook (1938) approaches its problem under five headings: The Regulation of Our Behavior, The Mechanisms Behind Our Behavior, The Relationship of Learning to Behavior, Behavior in Specific Life Periods, and Behavior as Related to Emotional Life, and there has been added material dealing with the emotional reactions and psychology of childhood, as well as a revision of

the "thought problems" at the end of each chapter. There is no doubt about the practicality of these "thought problems" when discussed under the leadership of a psychologist, and the general text of this book is very readable.

Public health nurses will find the last chapter (Chapter XV) interesting and all the reading lists helpful.

DOROTHY DEMING

Bonnie's Baby Brother and How He Grew—*By Elizabeth Rider Montgomery. New York: Stokes,* 1942. 95 pp. Price, $2.00.

This book contains an attractive series of photographs with a simple and brief text made by a mother for her 5 year old daughter which presents pictorially the rapid growth and development of a new baby brother, at successive 2 month periods, during his first year of life. It portrays the rapidly changing and increasing relationships between the new baby, his sister, and the parents.

A main purpose of the book is to prepare an older child for the arrival of a new member of the family. This is neatly and casually done in picture and text. Section II, "Two-Month Old," perhaps should include an illustration of attempts of vocalizing instead of placing this illustration in the "Four-Month Old" group.

Although this book should help prepare any child for a new addition to the family, naturally it cannot be expected to accomplish this by itself. Of primary importance are the attitudes of and preparation given by the parents to an older child long before birth of a new baby. More attention than necessary is given to the anterior fontanel and care needed to protect it. Slightly more attention and emphasis than may be warranted is given to the older child's responsibility for helping with the baby's care. One gains the impression that the mother may be fearful that her daughter may not love the baby and so compensates by overdoing the matter of preparing the older child.

In other respects the text is beautifully presented. Children from 3 years of age should enjoy and appreciate this book. No doubt young mothers preparing for their first-born may find the book informative as to changes in growth and development to be expected in the first year of their child's life.

GEORGE S. FRAUENBERGER

Nutrition and Chemical Growth in Childhood. Vol. I. Evaluation—*By Icie G. Macy, Springfield, Ill.: Thomas,* 1942. 432 pp. Price, $5.00.

This first of two volumes presents the results of ten years of intensive clinical and biochemical investigation of normal children. The study was soundly conceived and was carried out with infinite care for scientific detail. Volume I consists of detailed discussion of factors involved in such a comprehensive study, of methods used, and of records kept. The book also gives brief glimpses of summarized results. The second volume will concern the interpretation of these results and, it is to be hoped, the complete data obtained in the studies.

The detail of the descriptions in the present volume will make the book a most helpful reference for those engaged in similar studies. The summarized results are a valuable contribution in themselves and serve to whet the appetite for Volume II, which will contain the detailed results.

GENEVIEVE STEARNS

The Modern Attack on Tuberculosis—*By Henry D. Chadwick and Alton S. Pope. New York: Commonwealth Fund,* 1942. 95 pp. Price, $1.00.

This concise manual sets forth all the information essential in the formulation of a program for controlling tuberculosis in any community. All phases of

the disease are efficiently discussed, including epidemiology, case finding, diagnosis, and treatment. The simple practical manner in which the authors present the epidemiological aspect is of particular interest to all public health workers. Too frequently control programs exclude practical application of all the information available from the epidemiological viewpoint.

The importance of hospitalization is properly emphasized. Case finding is discussed thoroughly. Basing their views on a wide experience in the examination of different population groups, valuable information is given concerning the groups most productive of new cases of tuberculosis. The unimportance of the mass examination of school children as a means of case finding is stressed.

The last chapter deals with the various steps to be taken in organizing a community campaign for the eradication of the disease. The forecast expressed by the authors for the eradication of tuberculosis may be somewhat optimistic; nevertheless, such a goal should spur the interest of all.

This book should be in the library of every health department and used as a handbook by health officers, public health nurses, and all others interested in tuberculosis control. R. S. GASS

Microbiology of Meats—*By L. B. Jensen. Champaign, Ill.: Garrard Press,* 1942. 252 pp. Price, $4.00.

This monograph is based on many years of experience in applied bacteriology, the most recent of which have been spent as Chief Bacteriologist of one of America's largest meat-packing concerns in Chicago, Swift and Company. Dr. Jensen therefore speaks from much experience when he reviews what goes on microbiologically "in the yards." *Microbiology of Meats* is divided into 12 chapters.

As should be the case, the monograph starts with Introduction and History followed by discussions of such subjects as nitrate curing, gaseous fermentation of meat products, green discoloration, action of microörganisms on fats, ham souring, microbiology of fresh meats, sausage, bacon, and other meat specialties. Control of microörganisms in the meat-packing plant is discussed in considerable detail, attention being given to contributions of microörganisms which might be made to meat products by such things as paper, sawdust, and wooden apparatus. The final chapter deals with food poisoning problems on which much more light is needed in some quarters.

The book is well documented with references to the literature. It should be in the libraries of all food technologists and especially of all those who work for meat preservation concerns. It is also a fine example of the art of book making. F. W. TANNER

Emergency Care — *By Marie A. Wooders, R.N., and Donald A. Curtis, M.D. Philadelphia: Davis,* 1942. 560 pp. Price, $3.50.

This is an excellent textbook on emergency care, intended for the use of nurses. It should be just as useful to those who have taken the Red Cross First Aid and Home Nursing courses.

The authors use many effective diagrams, tables, and photographs. Especially useful in this period of emergency should be the unusually good material assembled in the section on General Emergencies. The sections on Hospital and Occupational Emergencies are also well handled.

The book is helpfully indexed and there is a useful set of questions, with a bibliography at the end of some of the chapters. It is to be regretted that the authors did not see fit to have this worth while feature at the end of all chapters. One questions the necessity of the chapter on the Organizations of

the Army and Navy, but these are only minor criticisms.

Altogether for the purposes for which this book is intended, the reviewer feels that the objectives have been accomplished. HARRY E. UNGERLEIDER

The Meat You Eat—*The report of the New York State Trichinosis Commission. Legislative Document 35, 1942. 94 Broadway, Newburgh, N. Y.*, 1942. Paper, 141 pp.

The Meat You Eat is the second and final report of the New York State Trichinosis Commission which was created in 1940, and extended in 1941 with the object of recommending methods of preventing trichinosis in New York State. The present report, while not as complete as the original one entitled *Meat for Millions*, nevertheless is interesting in relation to the matter of trichinosis. A brief history of trichinosis and a report of recent outbreaks is presented and trichinosis developments during 1941 are reported by Dr. W. H. Wright of the National Institute of Health. The recommendation by the commission that the state adopt compulsory meat inspection, locally administered, has been approved. Previous recommendations of the commission were also adopted in 1941. The present report does not deal exclusively with pork, and embraces the subject of meat, its inspection and its place in the dietary. This report is a useful contribution to the subject of trichinosis, and if widely circulated to the laity should help educate the public without frightening them about pork, or detracting from its value as a foodstuff.

HARRY MOST

Psychology in Nursing Practice—*By Philip L. Harriman, Lila L. Greenwood and Edward Skinner. New York: Macmillan*, 1942. 483 pp. Price, $3.25.

Here is a psychology written for both nurses in training and nurses in service, by a professor of psychology, a professor of education, and a nurse who is a teaching supervisor in a hospital in addition to being an assistant instructor of therapeutics to medical students. Such a combination of authors accounts for the scientific accuracy, broad outlook, practicality and up-to-dateness which this textbook displays.

The philosophy of the contents is the same as that of *A Curriculum Guide for Schools of Nursing* (1937 edition). The pattern of organization into four units is also the same as that recommended in the *Guide*. One chapter deals with the Nature and Methods of Psychology, five chapters, with the Biological and Social Basis of Behavior; four chapters with Essentials of Learning, and six chapters with Personality and Adjustment.

Particularly good is the chapter entitled "The Behaving Organism" with its excellent diagrams and graphs drawn from a wide field of recent research. The chapter ends with a good description of the physical and personality changes brought on by old age and senility. The treatment of the chapter entitled "The Atypical and the Socially Maladjusted" with its case histories is especially valuable for nurses.

The chapter on the Psychology of Mental Deficiency and Mental Disorder, by Robert M. Lindner, Ph.D., of the U. S. Public Health Service, opens up some interesting theories about the causes of mental deficiency. Here Dr. Lindner expresses his views as to the possibility of alteration of the germ plasm in syphilis. In the chapter on the learning process, the statement that a pan of water on the radiator is sufficient as a device to raise the humidity of a room is open to question.

There are footnotes on nearly every page, an extensive series of questions and exercises, and a list of selected references at the end of each chapter.

The appendix contains monthly rec-

ords for judging personality and professional efficiency, suggested reference books for students of nursing in the various fields of psychology including mental hygiene, and an excellent vitamin chart. There is an index of subject and an index of names.

Nurses in training and in service have a treat coming if they have to use this textbook, which, in addition to being on a high intellectual plane, embodies the fundamentals of all the types of psychology and ties them up with the actual patients and problems nurses have in the hospital or in the home.

EVA F. MAC DOUGALL

The Mentally Ill and Public Provision for Their Care in Illinois—*By Stuart K. Jaffary. Chicago: University of Chicago Press,* 1942. 214 pp. Price, $1.25.

This is one of the many good monographs in the University of Chicago Social Service series. The approach is essentially social but with liberal informative data on the legal and institutional aspects. The focus is well expressed in the introduction, "The present study lies in the field of public responsibility for the care of the mentally ill."

The medical profession as well as the general public should find this work of distinct educational value. Insanity is not only a term of sociolegal origin, but it is also a problem essentially for the public services and the legal channels which largely control the public approach to it.

Medicine had better realize that psychiatry is a neglected problem child in the medical school curriculum. The public had better look to its legal administration in probate work as this study shows amply the indifference, apathy in the two approaches.

We cannot agree with the writer that psychiatric treatment is so costly that it is beyond the reach of all save a small number of wealthy persons (page 175). This is over-argument for public control. Hospitalization plans, such as in Cleveland, have bridged nicely the short periods of institutional major therapy. Then too the needed development of psychiatric service in general hospitals will lessen the need for a huge expansion of public facilities which practically are never sought out by the patient and used then as a last resort.

MAURICE A. R. HENNESSY

Microbiology and Man—*By Jorgen Birkeland. New York: F. S. Crofts & Co.,* 1942. 478 pp. Price, $4.00.

This volume contains four sections. The first (130 pages), on Fundamentals of Microbiology, contains nine chapters on general properties of microörganisms, their physiology, etc., including a historical introduction, a chapter on methods of study, and several on such phenomena as variation and effects of chemical and physical agents on microorganisms. The second section (49 pages) contains four chapters on Infection and Resistance, but one discusses the spread of infectious disease, and one epidemiology and the use of biostatistical methods. Section three, the largest in the book (185 pages) describes over thirty Common Infectious Diseases. The diseases are generally discussed under three or more headings, an example being whooping cough: symptomatology, etiology (synopsis of *Hemophilus pertussis*), pathogenesis of the disease, immunity, epidemiology, prevention, and control. The last section of 77 pages on the Microbiology of Food, Milk, Water, Sewage, and Soils contains a chapter on each of these topics as well as one on Food Toxemias and Food-borne Infections. A condensed synopsis of the orders, families, and tribes of the Class Schizomycetes, a glossary, a list of pertinent publications, and an index complete the volume.

The author has a good grasp of his subject and writes interestingly and

concisely, sometimes all too briefly. The book is relatively free from factual error, and is generally up-to-date. Although there are several excellent pictures and graphs, it would be much improved by more illustrations, tables, and specific instances. Laboratory methodology is almost entirely absent. The material is developed primarily for the student of medical and public health bacteriology, although the author has aimed at a general treatise.

MARTIN FROBISHER

Nursing History—*By Minnie Goodnow. (7th ed.) Philadelphia: Saunders,* 1942. 495 pp. Price, $3.00.

This is very readable history. Much has been added to this seventh edition from Miss Goodnow's further study of source material and her personal observations in many countries. The author has not only dealt with developments in nursing in the countries where most progress has been made, such as England and America, but she has included interesting sketches of developments in all European and Asiatic countries that can boast of a nursing program.

Beginning with nursing in ancient times, Miss Goodnow traces the outstanding developments in nursing, pointing out how nursing has been influenced by war, religion, and the change in the status of women. With the rapid changes of the present emergency, it is regrettable that this new edition could carry the reader no further than the threshold of World War II. The weakest part of this history is in the field of public health nursing although the author speaks of this field as "the most important future development in nursing."

Instead of using space to give cases to illustrate the need for social service, a few case histories to illustrate good family health work would have given a truer picture of public health nursing. The participation of the government in public health nursing and its far reaching influence on standards through the nursing bureaus of the U. S. Public Health Service and the Children's Bureau should have been stressed.

While Miss Goodnow gives due credit to the work of the Red Cross in its contribution to nursing in other countries, the place played by the Rockefeller Foundation in its extensive program for nursing education and public health nursing in coöperation with government agencies throughout the world is given very little attention.

MARGUERITE WALES

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

Small Wisp Points Gale's Direction—In New York State, the September death rate from tuberculosis was 43.5, an increase of 14 per cent above that of September, 1941. The last increase of such magnitude occurred in 1917, the first year of our participation in the first, or youth's size, World War.

ANON. Health Conditions in New York State—September, 1942. Health News. 19, 45:189 (Nov. 9), 1942.

Odd Items from Everywhere Department—Did you know this? "One interesting and little known fact about drinking, is that water taken on an empty stomach may lead to greater thirst, as the liquid passing quickly to the tissues, may provoke a diuresis of greater volume than the liquid drunk."

ANON. Editorial Notes. J. Roy. Inst. Pub. Health & Hyg., 5, 10:183 (Oct.), 1942.

Just in Case—What was done in a built-up region that was heavily bombed on consecutive nights makes gruesome but useful reading. Great need was found for temporary housing accomodations, and the sanitary problems created by the nightly exodus were many and difficult, as any health administrator would anticipate.

ANON. Public Health Aspects of Intensive Air Raids on a Built-up Area. Pub. Health. 56, 1:7 (Oct.), 1942.

Good Record Proudly Presented—Eight points of an attack against cancer as developed in a 13 year old county program are convincingly reported upon. Outstanding in the educational phase is the approach to teen age school children.

ADIE, G. C., and CHARLTON, H. R. Cancer Control in Westchester. J.A.M.A. 120, 10:752 (Nov. 7), 1942.

Against Venereal Disease in Industry—Ways to find and refer for treatment all venereal cases among industrial employees so that patients may continue on the job without danger to themselves or their fellow employees is a timely topic. All health workers, as well as those to which it is addressed, will profit by reading this committee report.

ANDERSON, O. L., *et al.* Recommendations to State and Local Health Departments. J.A.M.A. 120, 11:828 (Nov. 14), 1942.

More Anti-venereal Effort Needed—Blood tests of military candidates have revealed 200,000 men with syphilis. Current reports indicate that only 40 per cent of them have been placed under treatment. Of the men in the services 4 of each 100 contract venereal disease in our communities. These are some of the indications that we should be doing plenty more than we are at present about this major threat to our war effort.

ASELMEYER, A. J. Civilian Measures for the Control of Venereal Diseases in World War II. J.A.M.A. 120, 12:880 (Nov. 21), 1942.

Sick Cats and Pneumonia—Speaking of virus pneumonias—as who isn't these days—it seems that cats, too, are succumbing to an epidemic caused by a virus (but one that cannot pass through filters, resembling in this respect the elementary bodies of psittacosis). A number of instances of contact between sick cats and people

who have developed atypical pneumonia have been noted.

BAKER, J. A. A Virus Obtained from a Pneumonia of Cats and Its Possible Cause of Atypical Pneumonia in Man. Science. 96, 2499:475 (Nov. 20), 1942.

Miscellaneous Notes on Whooping Cough—Pertussis antitoxin can prevent whooping cough if given prior to the onset of coughing, but is of little value once the "whoop" is on. Nasopharyngeal cultures are superior to cough plates as diagnostic aids. These are only two of many important findings reported in a series of three related papers, published together.

BULLOWA, J. G. M., *et al.* Pertussis Immunity with Toxin and Antitoxin; (and) BROOKS, A. M., *et al.* The Method of Nasopharyngeal Culture in the Diagnosis of Whooping Cough. J.A.M.A. 120, 12:886 (Nov. 21), 1942.

Epidemiologic Note—Incubation periods in 37 attacks of poliomyelitis varied from 5 to 35 days and averaged 12.2 plus or minus 1.1 days.

CASEY, A. E. The Incubation Period in Epidemic Poliomyelitis. J.A.M.A. 120, 11: 805 (Nov. 14), 1942.

As Doctors Become Scarce—For a half million farm people, the Farm Security Administration's medical care program has brought medical and hospital services within the range of thin, rural pocketbooks. If the plan is found practical in that obviously difficult situation, it would seem worth studying for its possibilities for adaptation to the millions of urban people who also need medical care.

GODING, H. K. Better Health for Farm Families. Pub. Health Nurs. 34, 11:616 (Nov.), 1942.

Educators Please Note—Breaking a self-imposed rule about direct quotes, here are five for your edification: "When the people were shown it was unprofitable to tolerate tuberculosis, something was done—and done in a hurry." "The public was not interested in tuberculosis, it was not interested in health; it was interested in the cost of the disease." "The change in emphasis from 'a clean tooth never decays' to 'improving beauty and attractiveness through good teeth' sent untold numbers of young and old to dentists." "This thought influenced people because they were interested in beauty and not health (or truth)." "There appears to be valid reason for challenging interest in health as even an important reason for healthy practices."

GUDAKUNST, D. W. The Interest of the Public in Health. Canad. Pub. Health J. 33, 10:490 (Oct.), 1942.

Feeding Our Neglected Toddlers—Number nineteen in an outstanding series of articles on nutrition (referred to in this bibliography at the beginning) this paper on infant feeding demands that it be called pointedly to your attention. Though we have done reasonably well nutritionally by our babies, we're not doing right by those past infancy, concludes this author.

JEANS, P. C. The Feeding of Healthy Infants and Children. J.A.M.A. 120, 12:913 (Nov. 21), 1942.

Colleges with TB Case Finding—Minnesota, Western Reserve, Yale, Michigan, Vassar, Pennsylvania began it. Now more and more colleges are doing something about tuberculosis, the leading cause of death of college age women and men. There is, however, still a widespread neglect of this health administrative essential among our institutions of so-called higher education.

LIGHT, C. E. Tuberculosis in College Students. Am. Rev. Tuberc. 46, 3:227 (Sept.), 1942.

Balm for Smoking Mothers—Nicotine was found to be excreted in the milk of all mothers who smoke

cigarettes, but the amounts were so small that there was no demonstrable effect upon the nurslings. As so few mothers can be induced to nurse their babies nowadays, this reassuring finding is of less moment than it would have been with the breast feeding practices of a generation ago.

PERLMAN, H. H., *et al.* The Excretion of Nicotine in Breast Milk and Urine from Cigarette Smoking. J.A.M.A. 120, 13:1003 (Nov. 28), 1942.

Public Health's Step-Child—Thirty-nine varieties of state cancer control programs were tabulated and summarized. Only about a million and a quarter dollars seem to have been expended last year on this still largely neglected service, but interest in doing something increases.

SCHEELE, L. A. Present Status of State Cancer Control Programs. Pub. Health Rep. 57, 43:1599 (Oct. 23), 1942.

For Distant-visioned Health Officers—Care of the aged being about the last thing on the conscience of most health workers today, you may question the utility of including articles on geriatrics in this bibliography. However, the subject is brought to your attention from time to time because of the hunch that it is destined some day to become an important part of health administration. This paper points out that healthy old people can serve in industry as substitutes for absent soldiers.

THEWLIS, M. W. Care of the Aged. J.A.M.A. 120, 10:749 (Nov. 7), 1942.

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GOOD NUTRITION FOR EVERYBODY. By L. Jean Bogert. Chicago: University of Chicago Press, 1942. 165 pp. Price, $1.50.

HOW TO TEACH NUTRITION TO CHILDREN. By Mary Pfaffmann and Frances Stern. New York: M. Barrows, 1942. 224 pp. Price, $2.00.

COMMUNITY WORKSHOPS FOR TEACHERS IN THE MICHIGAN COMMUNITY HEALTH PROJECT. By Henry J. Otto, *et al.* Ann Arbor: University of Michigan Press, 1942. 303 pp. Price, $2.00.

PUBLICITY: HOW TO PLAN, PRODUCE AND PLACE IT. By Herbert M. Baus. New York: Harper, 1942. 252 pp. Price, $3.00.

MENTAL ILLNESS: A GUIDE FOR THE FAMILY. By Edith M. Stern with collaboration of Samuel W. Hamilton. New York: Commonwealth, 1942. 134 pp. Price, $1.00.

MENTAL HEALTH IN COLLEGE. By Clements Fry. New York: Commonwealth, 1942. 365 pp. Price, $2.00.

THE ROAD TO GOOD NUTRITION. By Lydia J. Roberts. Washington: Government Printing Office, Bureau Publication No. 270. 54 pp. Price, $.15.

THIS IS MY LIFE. By Agnes Hunt. New York: Putnam, 1942. 237 pp. Price, $2.50.

EXTRA-MURAL TEACHING OF PREVENTIVE MEDICINE AND PUBLIC HEALTH. By Alfred Korach. Cincinnati: The Medical Bulletin of the University of Cincinnati, Vol. IX, 1942. 143 pp.

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Henrietta Herbolsheimer, M.D., 606 S. Fourth St., Springfield, Ill., Field Consultant in Maternity and Infancy, State Health Dept.

Lenore Patrick, M.D., State Dept. of Health, Charleston, W. Va., Director, Maternal and Child Health

Public Health Education Section

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Mary C. Leo, A.B., State House, Augusta, Me., Director, Civilian Health Education, State Bureau of Health

Albertine P. McKellar, B.S., Cumberland County Health Dept., Fayetteville, N. C., Asst. Consultant in Health Education, U. S. Public Health Service

Myrtle H. Miller, R.N., 401 Estelle, Ferguson, Mo., Staff Nurse, St. Louis County Health Dept.

Cornelia Mulder, Community Service Center, Flint, Mich., Health Educator, Flint Board of Education

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Public Health Nursing Section

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Sophia A. Jarc, B.S. in N., N. Y. State Dept. of Health, Albany, N. Y., Public Health Nursing Educational Consultant

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Mary Ann MacKay, B.S., 204 City Hall, Peoria, Ill., Supt., Visiting Nurse Assn.

Jean E. McNee, Peabody College, Nashville, Tenn., Asst. Prof. in Public Health Nursing

Edna L. Moorhouse, M.A., Main St., New City, N. Y., Supervising Public Health Nurse, State Dept. of Health

Leora R. Neal, R.N., 1906 W. DuBois, Lawrenceville, Ill., Supervising Nurse, Lawrence County Dept. of Public Health

Hazel A. Nordley, Box 387, Crandon, Wis., Public Health Nurse, State Board of Health

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A. Mary Ross, 3408 Kenwood, Kansas City, Mo., Supervisor and School Nurse, Board of Education

Mary J. Ross, 5660 Kingsbury Blvd., St. Louis, Mo., School Nurse, School District City of LaDue, Mo.

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Epidemiology Section

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William A. Davis, M.D., M.P.H., 331 E. 71st St., New York, N. Y., Staff Member, International Health Division, Rockefeller Foundation

Harry Goldman, M.D., M.P.H., 259 Hanover St., Boston, Mass., Deputy Commissioner, Boston Health Dept.

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David S. Ruhe, M.D., 840 Cherry St., 605 Volunteer Bldg., Atlanta, Ga., Asst. Surgeon, U. S. Public Health Service

Unaffiliated

Max Gross, M.D., 109 States Ave., Atlantic City, N. J., Director of Tuberculosis Clinics for State of New Jersey

Jerome R. Mulconnery, D.D.S., 325 E. Broadway, East St. Louis, Ill., Dentist, East Side Health Dist.

DECEASED MEMBERS

LeRoy A. Wilkes, M.D., Trenton, N. J., Elected Member 1919, Maternal and Child Health Section

Horton R. Casparis, M.D., Nashville, Tenn., Elected Member 1941, Maternal and Child Health Section

E. G. Buckland, New Haven, Conn., Elected Member 1920, Health Officers Section

S. S. Goldwater, M.D., New York, N. Y., Elected Member 1902, Elected Fellow 1922, Charter Fellow, Maternal and Child Health Section

EMPLOYMENT SERVICE

The Association Employment Service seeks to bring to the attention of appointing officers the names of qualified public health personnel and to act as a clearinghouse on employment. This is a service of the Association conducted without expense to the employer or employee.

From the registry of persons available, selected announcements are published from time to time. Appointing officers may obtain lists of all registrants on request.

Address all correspondence to the Employment Service, American Public Health Association, 1790 Broadway, New York, N. Y.

POSITIONS AVAILABLE

U. S. CIVIL SERVICE COMMISSION. Public Health Nursing Consultants, 5 grades. See November *American Journal of Public Health*, or write U. S. Public Health Service, Washington, D. C.

Merit System Council, Oregon State Board of Health and Crippled Children's Division, has announced merit examinations in practically all public health fields. See November *American Journal of Public Health*, or write H. J. Sears, Merit System Supervisor, P. O. Box 88, Portland, Ore.

Indiana State Personnel Division announces that applications may be filed for positions in orthopedic nursing, medical positions (5 classes), and local public health director. See November *American Journal of Public Health*, or write Indiana State Personnel Division, 141 South Meridian Street, Indianapolis, Ind.

Physician, man or woman, as director of Division of Maternal, Child and School Hygiene in southern city department of health. Woman physician with pediatric training preferred, public health experience not essential. To operate prenatal, infant and preschool clinics and promote school health program. Salary commensurate with ability and qualifications of applicant. Apply **Box J**, Employment Service, A.P.H.A.

Southern state department of health seeks several obstetric and pediatric consultants, requiring a minimum of a year's residency in a specialty, immunity to draft and preferably training in public health. Men and women are eligible. Salary $300 per month plus travel. Apply **Box C**, Employment Service, A.P.H.A.

Public Health Engineer and director of Division of Sanitation of a city and county health unit; population 145,000 in the Midwest. Salary $3,180 and travel allowance. **Box E**, Employment Service, A.P.H.A.

The Flint Civil Service Commission will consider applications for Executive Health Officer of the Flint Department of Health. Applicants must be medical graduates with a valid license to practise medicine in Michigan or eligibility for such license; also must have practised medicine and surgery for five or more years and had considerable experience in public health work. There will be no written test, qualifications being judged solely from review of experience, education and training and an oral examination. Present incumbent is on military leave of absence under circumstances which will probably extend for a period of five years. Staff consists of over fifty professional and technically trained employees. Probable salary $5,400. Inquiries should be directed to Foster B. Roser, Director, Flint Civil Service Commission, City Hall, Flint, Mich.

MEDICAL OFFICERS NEEDED—TENNESSEE VALLEY AUTHORITY

The Tennessee Valley Authority is in urgent need of medical officers who are not eligible for military service and who are willing to accept assignments to war industrial activities (construction, manufacture of war chemicals and manufacture of hydroelectric power) as their participation in the all out war effort. Responsibilities include physical examinations, industrial hygiene, care of injuries, medical care to families in remote construction areas and general public health responsibilities in construction camps and villages.

Salary ranges from $3,200 to $4,200 per annum with opportunity for promotion.

For further information write to Dr. E. L. Bishop, Director of Health, Tennessee Valley Authority, Chattanooga, Tenn., or to the Personnel Department, Tennessee Valley Authority, Knoxville, Tenn.

Public health nurses wanted for two-county unit in Michigan. Must be graduates with minimum of 4 months' public health training or 8 months' training under supervision. Salary $1,800 per year with travel allowance $35 to $41 per month. Must drive and own a car. Address Dr. Koupal, Director Alger-Schoolcraft Health Dept., Manistique, Mich.

CAREER OPPORTUNITIES IN PENNSYLVANIA

Charles B. Frasher, Merit System Supervisor, Pennsylvania State Department of Health, 207 Blackstone Building, Harrisburg, announces that appointments will soon be made in the following branches of the State Health Department of Pennsylvania: Health Conservation, Tuberculosis Control, Venereal Disease Control, Pneumonia Control, Industrial Hygiene, Narcotic Drug Control, Environmental Hygiene, Public Health Laboratories, Maternal and Child Health Services, Crippled Children's Services, School Medical Inspection, Dental, Nutrition, Milk Sanitation, Public Health Education, Sanitary Engineering, Vital Statistics, Public Health Nursing, Accounts, Biologicals and Supplies, Merit System, Tuberculosis Sanatoria. Open competitive examinations will be held and the resulting lists are expected to be in existence for 2 years or longer. Residence requirements are waived for professional positions.

INDUSTRIAL HYGIENISTS

The Research Section of the Division of Industrial Hygiene, National Institute of Health, Bethesda, Md., needs chemists, physicists, and medical technicians, as well as laboratory assistants in these fields. There is also opportunity for persons without college education, specific training or experience who are interested in such positions. Women now form one-third of the employees in the Research Section.

FOR OTHER POSITIONS AVAILABLE WRITE EMPLOYMENT SERVICE, AMERICAN PUBLIC HEALTH ASSOCIATION, 1790 BROADWAY, NEW YORK, N. Y.

In view of the current active demand for trained and experienced persons in public health it is suggested that prospective employers communicate directly with the Employment Service, American Public Health Association, 1790 Broadway, New York, N. Y., for up-to-date lists of applicants.

POSITIONS WANTED

M.D., Dr.P.H., interested mental and industrial hygiene, chief of mental hygiene clinic, on staff of psychiatric hospital, speaker, writer, author of books on health, diplomate in psychiatry, professor of psychiatry. Ineligible for military service because of age, healthy, vigorous, able to work hard, now in private practice; would make sacrifice and accept decent but lower remuneration than present income if he could be employed in war industry, preferably New York, New Jersey, or Connecticut. United States citizen. Had important government job in last war. Speaks and writes several languages. **A-504.**

NEWS FROM THE FIELD

Improvement in the Teaching of Tropical Medicine in Medical Schools

THE John and Mary R. Markle Foundation has appropriated $25,000 to the Association of American Medical Colleges to finance a program for the improvement of teaching tropical medicine in the medical schools in the United States and Canada. The development of of this plan has been placed in the hands of a Committee on Tropical Medicine of the association consisting of Henry E. Meleney, M.D., New York University, Chairman, Malcolm H. Soule, Sc.D., University of Michigan, and Hiram W. Kostmayer, M.D., Tulane University. The plan consists of offering to each medical school an opportunity for two members of its teaching staff to attend a 2 months' course in tropical medicine beginning January 4, 1943.

The Surgeon General of the Army has given permission for one representative from each school to attend the course in tropical medicine being given to medical officers at the Army Medical School, Washington, D. C. This course consists of a broad survey of tropical medicine, and is intended for clinical instructors in medical schools.

The Department of Tropical Medicine of Tulane University has agreed to give a special course in tropical medicine in which particular emphasis will be placed upon the laboratory diagnosis, pathology, clinical aspects, and prevention of tropical diseases. This course is intended particularly for physicians who will teach the laboratory aspects of tropical diseases.

Each of these courses can accommodate thirty instructors from medical schools. Travel and living expenses and, in the case of the Tulane Course, a tuition fee, will be paid from the appropriation of the Markle Foundation. The Deans of medical schools have been asked to nominate instructors to attend these courses, and the response indicates that each course will have a maximum attendance. Preference will be given to the schools whose instructors are now least well prepared to teach tropical medicine.

It is recognized that there is also great need for instructors in medical schools to obtain practical experience in tropical medicine. Preliminary inquiry indicates that such experience can probably be provided in the American tropics later during the coming year. Candidates for such practical experience would be selected from among those who had completed the course at the Army Medical School or Tulane, and other instructors who have had academic training but not field experience in tropical medicine.

The committee of the Association of American Medical Colleges has also interested itself in the collection of teaching specimens and material for the teaching of parasitic and other tropical diseases in medical schools. The Army Medical School, with the coöperation of the National Institute of Health and other institutions, is developing a Distributing Center for such material. Information concerning this Distributing Center is being sent to the medical schools with instruction for the procurement of material either locally or from the Center. It is expected that in addition to laboratory specimens of animal parasites, there may be available certain charts, lantern slides, and motion pictures.

The office of the Surgeon General of the Army has offered to make available to medical schools information which has been collected on the distribution of tropical diseases throughout the world. Plans for editing this material are in progress, and it is expected that maps will also be prepared, and made available to medical schools, showing the world distribution of the important tropical diseases. The Markle Foundation has made an additional appropriation of $3,000 to the National Research Council for the preparation of this material.

FACTS ABOUT NURSING, 1942

A convenient source book for those who deal with the broader aspects of nursing, especially in their relation to the nation's war effort, has been issued by the Nursing Information Bureau of the American Nurses' Association, 1790 Broadway, New York, N. Y.

Included among the timely data are the number of nurses serving in military, other government and voluntary hospitals and agencies; the number of nurses needed; the number of students enrolled in nursing schools; the distribution of federal funds for nursing education; salary ranges; and the number of auxiliary workers in nursing services. The pamphlet may be ordered from the Book Service, A.P.H.A., at 25¢.

NEW INDUSTRIAL HYGIENE DIVISION IN WASHINGTON STATE

Announcement has been made of the establishment on October 1 of a new Division of Industrial Hygiene in the Washington State Department of Health with offices in Seattle. This was made possible through a coöperative venture with the U. S. Public Health Service.

CHANGES IN ILLINOIS HEALTH UNITS

The Illinois State Department of Health, Roland R. Cross, M.D., Director, has announced that four of the Illinois counties designated as health defense zones have recently extended essential local health services throughout the entire zone to take charge of the new county-wide projects set up for the duration of the war. H. O. Collins, M.D., of the Quincy Public Health District, has been appointed defense zone health officer for Adams County, R. C. Farrier, M.D., of the East Side Health District as defense zone health officer for St. Clair County, and N. O. Gunderson, M.D., of the Rockford Health Department for Winnebago County, with Sumner Miller, M.D., of the Peoria City Health Department serving for Peoria County.

This raises to 11 the number of Illinois health defense counties in which state-subsidized local health service is now continuously provided. The state will contribute additional trained personnel to work under the supervision of the newly commissioned medical health officers as has already been done in the counties of Cook, DuPage, Lawrence, Lee, Morgan, Will, and Williamson.

The other 19 Illinois counties which are at present eligible for this service by virtue of their designation as health defense zones are Carrol, Champaign, De Kalb, Edgar, Fulton, Henderson, Kane, Kankakee, Knox, Lake, La Salle, McDonough, Macon, Madison, Marion, Rock Island, Sangamon, Tazewell, and Vermilion.

According to the *Illinois Health Messenger*, of the 91 Illinois counties which at present have no full-time county-wide local health service, 72 are entirely without recourse under existing Illinois law to any legal means of establishing such service.

"QUALIFICATIONS AND CLASSIFICATION OF PUBLIC HEALTH ENGINEERING PERSONNEL"

A report under the above title was presented at St. Louis before the Con-

ference of Municipal Public Health Engineers. It has been suggested by the Section officers of the Engineering Section, A.P.H.A., that the conclusions are worthy of publication. In brief they are as follows:

1. That the report of the A.P.H.A. on qualifications of personnel engaged in the field of environmental sanitation is acceptable.

2. That there should be three main categories of these workers, (a) public health or sanitary engineers, including only those having professional engineering degrees or their equivalent, (b) sanitarians, who may be non-engineering but technical employees working under engineering direction, (c) sanitary inspectors, a title to be applied to those in health department employment who are without adequate prior training or qualifications.

The committee is impressed with the necessity of providing classes of personnel below the level of public health (or sanitary) engineers. They recommend (1) the placing of these non-engineering groups under engineering direction, (2) raising their educational level by in-service training, and by replacement and addition of fully qualified persons, and (3) the achievement of a rational and uniform system of titles in place of the present haphazard designations inherited from the past.

SEVENTH ANNUAL MEETING OF THE INDUSTRIAL HYGIENE FOUNDATION

The Industrial Hygiene Foundation of Pittsburgh recently held its 7th Annual Meeting at the Mellon Institute. The purpose of the Foundation, which is a non-profit association of mining and manufacturing concerns, is to protect the health of industrial workers.

John F. McMahon was appointed Managing Director of the Foundation, succeeding Dr. H. B. Meller who has retired from active management because of ill health. Dr. Meller will continue as consultant.

More than 500 representatives from some 200 industrial concerns and a number of governmental agencies attended the annual meeting, which had for its theme Keep War Workers Well. Andrew Fletcher of New York was re-elected Chairman of the Board and new members of the Board of Trustees included Ned H. Dearborn, Ph.D., Executive Vice President, National Safety Council, Chicago; Professor Philip Drinker, Harvard School of Public Health, Boston; Lt. Col. A. J. Lanza, M.C., A.U.S., Chief, Occupational Hygiene Branch, and C. D. Selby, M.D., Medical Consultant, General Motors Corporation.

"LESSONS FROM BRITISH EXPERIENCE IN CIVIL DEFENSE"

George Baehr, M.D., Chief Medical Officer of the Office of Civilian Defense, Washington, has recently reported the following observations made on a recent inspection of emergency medical facilities in England and Scotland. These are summarized from *Medical Series Circular No. 20* of the O.C.D.

1. Heavy raids occur invariably at night, bombs now have much greater destructive effect, incendiary bombs are used in much larger numbers and fire is now the most serious hazard.

2. In large cities the field casualty services may handle more than 2,500 casualties during a night raid. All serious casualties are moved directly to hospitals and never to first-aid posts. Heavy raids are apt to be repeated on subsequent nights when the protective forces are exhausted.

3. A large fleet of four-stretcher ambulances is essential for life saving. These could be simply made from used passenger cars on which is mounted a simple ambulance body. The use of trucks has proven unsatisfactory, being absorbed for other purposes, and frequently not reaching the scene of accident.

4. Casualty stations staffed by one or two doctors, several nurses and a variable number of aides and auxiliaries are necessary at or near all hospitals and at places more than a mile from hospitals to care for minor casualties which do not require hospitalization. Many of these are now on a care-and-maintenance basis and are activated only during the raids.

5. In large cities casualty stations need not be more numerous than 1 per 25,000 inhabitants. They should be located about a mile apart. Many of the minor casualties are moved to first-aid posts in sitting-case cars; some walk.

6. First-aid parties or stretcher teams are

not necessary, are a waste of man power and are rapidly being eliminated in England. First-aid at incidents is essentially a function of the rescue parties which extricate casualties from under the debris of demolished buildings. All first-aid parties are being merged into rescue parties. They include a leader, assistant leader and 8 other members and are entirely independent of the fire department. They are a life-saving service related to the medical services concerned in field casualty work.

7. It is necessary to revise the concept underlying first-aid. Almost all raids occur at night, the victims are crushed under the debris of demolished buildings and are either dead or severely injured. Less than a third are slightly injured and can be cared for at casualty stations.

8. Wounds are usually grossly contaminated and need only be covered with a shell dressing until the casualty reaches the hospital. Hemorrhage is usually controllable with a pressure dressing, the tourniquet is rarely employed. Burns are covered only with sterile gauze until the casualty arrives at the hospital. Tannic acid jelly as a first-aid dressing for burns has been discarded because of the dirt which invariably contaminates the burned surface, because the jelly deteriorates rapidly and because tannic acid ignites in the presence of phosphorus when applies to burns caused by the explosion of phosphorus-oil bombs.

9. Traction splints are not used except when the casualty must be transported a long distance over country roads. The darkness and conditions of an air raid make hurried application difficult or impossible.

10. Shock is treated at the incident by prompt administration of adequate doses of morphine, coramine, proper blanketing, administration of fluids and the use of hot water bottles. The use of plasma or blood transfusion is deferred until arrival at the hospital.

11. The presence of a physician at the incident is invaluable but more than one is unnecessary. Physicians with a staff of nurses may supervise more than one incident.

12. The load of casualties is so distributed that even in heavy raids large hospitals rarely receive more than 50 to 100 casualties.

13. A large casualty receiving hospital is often related to one or more peripheral hospitals in the suburbs or in a country district. There are now four base hospital beds for each casualty bed in the cities.

14. On notification that casualties have occurred an express party is immediately dispatched consisting of one rescue first-aid party, one ambulance, one sitting-case car and one mobile medical unit, the latter consisting of one physician, one nurse and two auxiliaries. In this manner useless movement is avoided and equipment and personnel of the community is carefully conserved.

POSTGRADUATE COURSE IN INDUSTRIAL HYGIENE AT PHILADELPHIA

An 8 weeks postgraduate course in industrial hygiene and medicine has been announced to begin January 5 at the Philadelphia County Medical Society under the auspices of the Committees on Industrial Health of the Society and the Medical Society of the State of Pennsylvania. The course will be directed jointly by the Departments of Preventive Medicine and Public Health of the University of Pennsylvania and the Woman's Medical College of Pennsylvania. Topics listed for study are The Worker and the Job, Learning the Scope of the Field, Physical Factors, Non-occupational Disease Hazards in Industry, Toxicology and Compensation and Medico-Legal Factors.

ARMED SERVICES SET UP TYPHUS COMMISSION

Secretary Stimson of the U. S. War Department announced on November 19 the creation of the United States of America Typhus Commission which is made up of four persons under the chairmanship of Rear Admiral Charles S. Stephenson, Medical Corps, U.S.N. The other members are Lieut. Col. Harry Plotz, Medical Corps, A.U.S., Senior Surgeon Adolph Rumreich, Public Health Service, and Major John C. Snyder, Medical Corps, A.U.S.

SOCIAL HYGIENE DAY, 1943

Walter Clarke, M.D., Executive Director of the American Social Hygiene Association, New York, has announced the annual observance of Social Hygiene Day, scheduled for Wednesday, February 3, 1943.

Since the roots of syphilis and gonorrhea are in the home front, Dr. Clarke

pointed out that the observance of Social Hygiene Day would assume more significance than before. He recalled that total absences from duty during the first world war from these infections kept the equivalent of 20,600 men out of the fighting for an entire year. These are the equivalent of the personnel required to man five aircraft carriers and nine destroyers. In wartime he said that the function of social hygiene organizations is to persuade each community to use our weapons against the venereal diseases effectively.

1942–1943 OFFICERS OF IDAHO PUBLIC HEALTH ASSOCIATION

At its Third Annual Meeting, held in Pocatello October 12 to 13, 1942, the Idaho Public Health Association elected the following new officers:

President—A. H. Christiansen, Boise
1st Vice-President—Stuart Robinson, D.D.S., Gooding
2d Vice-President—Mrs. H. J. Maughan, Preston
3d Vice-President—Mrs. Otto Leuschel, Lewiston
4th Vice-President—Mrs. Emma Clouchek, Twin Falls
5th Vice-President—John M. Coughlin, M.D., Twin Falls
Secretary—H. C. Clare, Boise
Treasurer—Lucy M. Higgins, Boise

ORAL HEALTH GROUP

The Oral Health Group of the A. P. H. A., in session at St. Louis, Mo., in October, 1942, appointed the following officers:

Chairman—C. R. Taylor, D.D.S., Lansing, Mich.
Secretary—Walter J. Pelton, D.D.S., Washington, D. C.

MICHIGAN PUBLIC HEALTH ASSOCIATION

The Michigan Public Health Association held its 22nd Annual Meeting in Grand Rapids, November 11 to 13, and at that time elected the following new officers to serve for the forthcoming year:

President—Emilie G. Sargent, R.N., Detroit
President-elect—Edward D. Rich, Lansing
Vice-President—C. D. Barrett, M.D., Mason
Secretary-Treasurer — Marjorie Delavan, Lansing
Representative on A.P.H.A. Governing Council—W. R. Davis, D.D.S., Lansing

CONFERENCE OF MUNICIPAL PUBLIC HEALTH ENGINEERS

The new officers of the Conference of Municipal Public Health Engineers are as follows:

Chairman—William T. Ingram, A.B. in C.E., Stockton, Calif.
Vice-Chairman—J. Lloyd Barron, C.E., Roslyn Heights, N. Y.
Secretary-Treasurer — Charles Senn, Milwaukee, Wis.
Executive Committee:
Charles M. Davidson, Louisville, Ky. (1943)
Alan C. Love, Waco, Tex. (1943)
Aime Cousineau, Montreal, Can. (1944)
Leonard Board, C.E., Clayton, Mo. (1944)
Sol Pincus, C.E., New York, N. Y. (1945)
Alfred H. Fletcher, Baltimore, Md. (1945)

FORTY-SEVEN DEATHS FROM POISONING IN OREGON STATE HOSPITAL

The press on November 19 and 20 carried dispatches from Salem, Ore., indicating that 47 patients at the Oregon State Hospital for the Insane out of 467 served at an evening meal had died from a poison suspected of being sodium fluoride.

It is stated that all of the patients who ate the meal became ill and that symptoms included nausea, stomach cramps, and paralysis of the legs, with evidence of respiratory paralysis. Studies of the food indicated that rats fed on the eggs taken from the plates of the diners died within a few minutes, though they were not killed by eating eggs from the cans of frozen egg yolk which had been used for the meal. It was suspected that the fluoride had been put into the mixture during preparation in the institution. The first patient died within an hour of the meal and within 6 hours 32 had died.

As a result of the report the Depart-

ment of Agriculture halted further distribution of frozen eggs through its regional offices, pending the conclusion of the investigation at Salem.

TRANSPARENT MAN COMES TO CLEVELAND

Dr. Bruno Gebhard, Director of the Cleveland Health Museum, announces that, through the generosity of Louis I. Dublin, Ph.D., and Homer N. Calver of the American Museum of Health, the Cleveland Health Museum will show during the coming year most of the main items of the former Hall of Man and Medicine of the New York World's Fair. This material includes many items of the Oberlaender Trust Collection, such as the Transparent Man, and others. Public announcement of these exhibits was made at the Second Anniversary Luncheon of the Health Museum on November 20, where W. W. Peter, M.D., Dr.P.H., Associate Professor of Public Health at Yale University, was the speaker on "Keep the Home Fires Burning."

PAUL O. KOMORA IN NEW YORK STATE DEPARTMENT OF MENTAL HYGIENE

Paul O. Komora, associate secretary of the National Committee for Mental Hygiene since 1932, has resigned from that organization to become assistant secretary of the New York State Department of Mental Hygiene at Albany. He was associated with the National Committee for many years, having served as secretary to Dr. Thomas W. Salmon, first medical director of the committee, and later as educational publicity director, editor, research worker, and assistant to Clifford W. Beers, founder of the organization, in the administration of its corporate affairs. The board of directors recently tendered him a testimonial dinner in observance of his 25 years of service with the committee and as a "send off" to his new post, at which Dr. Adolf Meyer presided and his friends and associates, including many distinguished psychiatrists, paid him tributes.

Mr. Komora served in the psychiatric organization in the U. S. Army in France during the first world war, helped to organize the First International Congress on Mental Hygiene held in Washington in 1930, directed the public relations work of the American Psychiatric Association and the American Orthopsychiatric Association at many of their conventions, and served as administrative secretary of the notable symposium on mental health conducted by the American Association for the Advancement of Science at Richmond, Va., in 1938. He is the author of various articles and reports in this field of public health.

In his new position, Mr. Komora enters upon duties and responsibilities comparable to his previous activities but adapted to the requirements of public service in one of the largest departments of government in a state that has long exercised leadership in the field of mental hygiene. In the major phases of his work he will be engaged in the administrative relationships of the department with the 26 institutions for the mentally sick and defective under its supervision, with other state departments as well as private institutions and agencies active in mental health and social welfare work, and with the public. There are over 100,000 patients in the institutions of the Department of Mental Hygiene. To care for and properly treat this large body of patients requires the services of nearly 500 physicians, over 12,000 ward employees, and over 6,000 other employees. To maintain these patients requires an annual expenditure of approximately $36,000,000.

FIFTH ANNUAL CONGRESS ON INDUSTRIAL HEALTH

The Council on Industrial Health of the American Medical Association has

announced through the Secretary, Carl M. Peterson, M.D., that the Fifth Annual Congress on Industrial Health, under the sponsorship of the Council, will be held January 11–13 at the Palmer House, Chicago. The meetings are open to physicians and others interested in industrial health. There is no registration fee. The preliminary program can be found on pages 1145–1146 of the *Journal of the American Medical Association*, December 5, 1942.

PROGRESS IN DEFINING STANDARDS FOR TOXIC DUSTS AND GASES

The American Public Health Association is represented on the Committee on Allowable Concentrations of Toxic Dusts and Gases—Z. 37, of the American Standards Association, by J. J. Bloomfield of the National Institute of Health, Bethesda, Md. Mr. Bloomfield's recent progress report on the work of this committee indicates that the proposed American Standard Allowable Concentration of Chromic Acid and Chromates has been approved and will receive early publication. Similar action was taken on the proposed Standard for Mercury.

The committee is currently considering action on standards for Nitrous Gases, for Arsenic, for Carbon Tetrachloride, Lead, Xylol, Formaldehyde, Hydrofluoric Acid, Methanol, Silica, Toluene and Trichlorethylene. The committee has decided for the present not to attempt standards on Antimony and Zinc.

INDUSTRIAL MEDICINE COURSE AT LONG ISLAND COLLEGE OF MEDICINE

Thomas D. Dublin, M.D., Associate Professor and head of the Department of Preventive Medicine and Community Health of the Long Island College of Medicine, Brooklyn, N. Y., reports that the two weeks postgraduate course in industrial medicine given at the college during November has been completed. Fifty-nine physicians, nurses, and industrial observers from six states registered for the course, including the seminars and clinics. Seven of the students were placed as "interns" in medical departments of industrial firms which offered facilities for a month's practical training. These firms included the American Cyanamid Company, the Lowe Paper Company, the Bell Telephone Laboratories, Consolidated Edison Company, and the New York Telephone Company.

NEW HEALTH UNIT IN WASHINGTON

The health departments of Jefferson and Clallam Counties, Washington, have united to form a joint public health district unit, following a conference of the Washington State Department of Health and officials of these counties and the cities of Port Angeles and Port Townsend. The central office will be located at the court house in Port Angeles, with a branch office at Jefferson County court house in Port Townsend. District offices will be located in other sections of the counties.

PERSONALS

Central States

KURT CARL BECKER, M.D., of Troy, Ohio, has resigned as Health Commissioner of Miami County, to enter private practice in Troy. He will be succeeded, as Health Commissioner of Troy and Miami County by HARRY WAIN, M.D., M.S.P.H.,† of Sidney, formerly Health Commissioner for Sidney and Shelby County.

ARTHUR E. GORMAN,* who has been Engineer of Water Purification in Chicago, Ill., was appointed, on August 1, Chief of the Water Production Section, Power Division, War Production Board, Washington, D.

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* Fellow A.P.H.A.
† Member A.P.H.A.

C., on leave of absence from the City of Chicago.

FREDERICK G. HALL, M.D., formerly of Galesburg, Ill., has been named Assistant City Health Officer of Long Beach, Calif.

CHARLES E. LYGHT, M.D.,* who has been Professor of Health and Physical Education and Director of Student Health Service at Carleton College, Northfield, Minn., has been appointed Director of Health Education of the National Tuberculosis Association in New York, succeeding H. E. KLEINSCHMIDT, M.D.,* who resigned last summer. Dr. Lyght is a graduate of Queens University Faculty of Medicine, Kingston, Ont. He served for 9 years on the faculty of the University of Wisconsin Medical School, being connected with the Department of Student Health. He has been Chairman of the Tuberculosis Committee of the American Student Health Association.

LENORE V. L. PATRICK, M.D.,† of Chippewa Falls, Wis., formerly with the Wisconsin State Board of Health, has been appointed Chief of the Bureau of Maternal and Child Health of the West Virginia Department of Health.

HERBERT L. PETTITT, M.D., of Morrison, Ill., resigned on October 26 as Assistant Director of the Illinois State Department of Public Health to return to private practice, due, it was stated, to the shortage of physicians in his home city.

NORMAN S. REED, M.D., of Caldwell, Ohio, has been appointed Health Commissioner of Noble County, to succeed EDWARD G. DITCH, M.D., of Caldwell, who entered military service.

THURMAN B. RICE, M.D.,† Health Education Consultant, Indiana State Board of Health, Indianapolis, has been appointed Acting State Health Commissioner. JOHN W. FERREE, M.D.,* of Indianapolis, has been granted leave of absence as State Health Commissioner, to serve as Lieutenant Commander in the Medical Corps of the U. S. Navy; Dr. Ferree has been State Health Commissioner since October, 1940, and had also served as Chief of the Bureau of Local Health Administration. Dr. Rice, until his recent appointment as Health Education Consultant, was Chief of the Bureau of Health and Physical Education.

RUSH R. RICHISON, M.D., has been appointed Health Commissioner of Springfield, Ohio. He was succeeded as Health Commissioner of Clark County by ROBERT M. TAYLOR, M.D., of North Hampton.

WILLARD J. STONE, M.D.,† of Corvallis, Ore., has been appointed Health Officer of Marion County, succeeding VERNON A. DOUGLAS, M.D.,† of Salem, who was on leave of absence for the Oregon Civilian Defense Council.

JAMES F. WILSON, M.D.,† of Washington Courthouse, Ohio, has resigned as Health Commissioner of Fayette County, a position he has held for 16 years.

Eastern States

MARY M. ATCHISON, M.D., M.P.H.,† of Concord, N. H., for some years Director of the Divisions of Maternal and Child Health and Crippled Children's Services and Acting Director of the Division of Epidemiology and Local Health Work, was recently named Acting Deputy Secretary of the New Hampshire State Board of Health. In her new position, Dr. Atchison will coöperate with local health authorities in the promotion of community health programs. MILDRED I. A. CHAMBER-

* Fellow A.P.H.A.
† Member A.P.H.A.

LIN, M.D., of Hillsboro, succeeded Dr. Atchison as Director of the Division of Maternal and Child Health and Crippled Children's Services.

CLEON W. COLBY, M.D., Health Officer of Exeter District, Exeter, N. H., has been named Acting Director of the Divisions of Epidemiology and Venereal Disease Control recently consolidated. For the present, Dr. Colby will continue in charge of the Exeter office.

BENJAMIN G. HORNING, M.D.,* Associate Field Director of the American Public Health Association since August 1, 1940, has resigned to accept the position of Field Director of the W. K. Kellogg Foundation. M. R. KINDE, M.D.,* who formerly held this position, received a new assignment as the Foundation Medical Director. Dr. Kinde is at present on leave of absence and is serving as a Major in the Medical Corps attached to the North Atlantic Division of the United States Army Engineers, New York, N. Y.

THEODORE E. HYNSON, M.D., M.P.H.,† formerly of Dover, Del., has been appointed Health Officer of Harlan County, Ky.

JACOB KATZEFF, M.D., formerly of Brooklyn, N. Y., has been appointed Health Officer of LaFourche and Assumption Parishes, Louisiana.

JOSEPH H. KINNAMAN, M.D., M.P.H.,* has resigned as Health Officer of New Rochelle, N. Y., to accept the position as Director of the Kay County Health Unit, Ponca City, Okla. Headquarters for the new Unit will be Ponca City and Blackwell. The new unit will consist, beside the Director, of an Assistant Director, HOSMER JOHNSON, M.D., 2 sanitarians, 2 clerks, an administrative assistant, a supervisor and 6 staff public health nurses.

M. J. PLISHNER, M.P.H.,† formerly of the Tuberculosis and Health Association, Brooklyn, N. Y., now is a Captain in the Sanitary Corps, A.U.S., with a present assignment of Medical Inspector, Harbor Defenses of Chesapeake Bay and Fort Story, Va., with headquarters at the Station Hospital.

Southern States

JUANITA L. BOLTON, M.D., of Birmingham, Ala., has been appointed Health Officer of St. Clair County.

JAMES F. BRADLEY, M.D., of Liberty, Miss., has been appointed Health Officer of Noxubee County, succeeding GEORGE E. GIBBONS, M.D., of Macon.

PHILIP S. BROUGHTON,* who has recently served with the Social Security Board and formerly in connection with health education projects in the New York City Department of Health, has been appointed Director of the Division of Information, War Manpower Commission, Office of Emergency Management, Washington, D. C.

THOMAS BURK, M.D.,† of Rayville, La., has been appointed Health Officer of Copiah County, with offices in Hazlehurst, Miss., succeeding JOHN C. MCGUIRE, M.D.† of Hazlehurst.

G. G. CAUGHMAN, PH.G., has been chosen Health Officer of Columbia, S. C.

FRANCIS H. COLE, M.D., of Nashville, Tenn., has been placed in charge of the Division of Tuberculosis Control of the Memphis and Shelby County Health Department, effective July 1. He succeeds FELIX A. HUGHES, JR., M.D., of Memphis, who has been assigned to take charge of Lynnhurst Sanatorium, Oakville.

JAMES J. CORBALIS, JR., B.C.E.,† resigned as Sanitation Officer with the Virginia State Health Department,

* Fellow A.P.H.A.
† Member A.P.H.A.

serving Fairfax County, Virginia, in the capacity of Sanitary Engineer, to accept a position with the county of Fairfax as Sanitary Engineer for the organization and administration of two sanitary districts within which water and sewerage works are now being provided by the Federal Works Agency and which constitute the Metropolitan Area of Fairfax County adjoining Arlington County and the District of Columbia with an estimated population of 40,000 people embracing an area of 31 square miles.

EUGENE H. COUNTISS, M.D., of New Orleans, La., has been named Chief of the Emergency Medical Service in Louisiana.

HUBERT D. CROW, M.D., has been appointed Director of a combined district health unit comprising the counties of Southampton, Isle of Wight, Nansemond, Va., and the city of Suffolk, with headquarters in Suffolk.

JAMES A. DOLCE, M.D.,† U. S. Public Health Service, Washington, D. C., has been appointed Health Officer of the Fairfax-Prince William-Stafford Health District, succeeding CLIFFORD E. WALLER, M.D.,* of Leesburg, Va., who remains as Health Officer of Loudoun County, with headquarters at Leesburg. Loudoun County was formerly a unit in the health district.

LLOYD M. FARNER, M.D., C.P.H.,† of Nashville, Tenn., U. S. Public Health Service, has been placed in charge of the new Industrial Hygiene Division of the Washington State Department of Health. Dr. Farner, who has been lent to the state by the Public Health Service, organized and served as Director of a similar division in Montana and later as Director of Industrial Hygiene in Tennessee.

OWEN A. GROVES, M.D., recently Health Officer for Kanawha County, West Virginia, has been commissioned First Lieutenant in the Army Air Corps and left recently for the Army Training School at Miami Beach, Fla. No successor to Dr. Groves has been appointed.

JOHN H. HINES, M.D., of Canton, Miss., has resigned as Health Officer of Madison County, to join the Army.

HOWARD G. HOLLAND, M.D., of Leesburg, Fla., has been appointed medical consultant for the Florida Industrial Commission.

WILLIAM D. MAY, M.D.,† of Meridian, Miss., has been named Director of the Alcorn County Health Department, succeeding ROBERT H. DEJARNETTE, M.D.,† of Corinth, who has entered the Army.

MARVIN E. MCRAE, M.D., of Chatham, Va., Health Officer of Pittsylvania County, succeeds SAMUEL S. SHOUSE, M.D., of Luray, Health Officer of the Page - Warren - Shenandoah Health District, who was granted a leave of absence to enter military service.

BRUCE H. POLLOCK, M.D.,* formerly the Director of County Health Work in the West Virginia State Department of Health, Charleston, is a Lieutenant Commander in the U. S. Navy and is stationed at Boston, Mass.

WILLIAM R. RICHARDS, M.D., formerly of Calhoun, Ga., has been named Health Commissioner of Green County, Greensboro, effective July 1.

J. E. ROBINS, JR., M.D., has been named City Health Commissioner of Charleston, W. Va., to succeed F. B. CARLSON, M.D., who resigned to enter the service as a Lieutenant in the Navy Medical Corps.

MARGARET M. SCANNELL, M.D., formerly of Meridian, Miss., has been named Medical Director of the Sunflower County Department of Health, succeeding ANDREW HEDMEG, M.D.,† of Indianola, who has entered the military service.

* Fellow A.P.H.A.
† Member A.P.H.A.

MARTIN H. SKAGGS, M.D., of Taylorsville, Ky., was recently elected Health Officer of Shelby County.

DANIEL C. STEELSMITH, M.D., has been named to take charge of the newly consolidated Halifax-Pittsylvania Health District (Halifax and Pittsylvania Counties), with headquarters at South Boston, Va.

RAYMOND D. TOMPKINS, M.D., of Mountain Home, Tenn., has been appointed Chief Medical Officer at the U. S. Veterans Administration Facility, Bay Pines.

EDGAR W. WARREN, M.D., of Abbeville, La., Director of the Vermilion Parish Health Unit, has been appointed to a similar position in Jefferson Parish.

GORDON R. WESTROPE, M.D., Director of the Cherokee County Health Department, Gaffney, S. C., has been appointed Director of District No. 2, including 11 upper state counties.

Western States

CHARLES BENNINGER, JR., M.D., City Health Officer of Oroville, Calif., has been appointed County Health Officer of Butte County, to succeed LOUIS C. OLKER, M.D., of Chico, who resigned.

PAUL G. BUSS, M.D., of Los Angeles, Calif., has been appointed Assistant County Health Officer of Orange County, Anaheim.

HERALD R. COX, Sc.D., Chief Bacteriologist at the Rocky Mountain Laboratory, U. S. Public Health Service, Hamilton, Mont., and President of the Montana State Public Health Association, has accepted a position as Associate Director of Research for the Lederle Laboratories, Pearl River, N. Y. He will have charge of all virus disease work.

WILLIAM P. FRANK, M.D.,† of Alhambra, Calif., has been appointed Health Officer of the Alhambra District, including El Monte, Monterey Park, San Gabriel, San Marino, and South Pasadena.

JOHN A. KAHL, M.D., M.P.H.,† of Walla Walla, Wash., has been appointed to take charge of the newly combined tri-county health district, comprising Walla Walla, Franklin, and Benton Counties.

HAROLD L. LAWRENCE, M.D., of Seattle, Wash., Passed Assistant Surgeon of the U. S. Public Health Service, has been appointed Chief of the Division of Epidemiology and Venereal Disease Control of the Washington State Department of Health, Seattle.

ARTHUR E. LEWIS, M.D., U. S. Public Health Service Reserve, has been assigned to Seattle, Wash., as Assistant State Medical Officer for Civilian Defense.

ROSCOE C. MAIN, M.D.,* of Los Angeles, Calif., formerly Health Officer of Santa Barbara County, has been appointed in charge of the Glendale District Health Unit, succeeding JOHN M. BUCHANAN, M.D., of Glendale, who has entered Army service.

DOROTHY Z. E. MCDONALD, M.D., C.P.H.,† of Madison, Wis., Advisory Physician in School Health Education of the Bureau of Maternal and Child Health of the Wisconsin State Board of Health, has resigned to become Vice-Chairman of the Department of Public Health of Loyola University Medical School, Chicago, Ill.

LESTER S. MCLEAN, M.D., of San Francisco, Calif., was named Health Officer of Solano County, August 3, succeeding GEORGE O'BRIEN, M.D., of Fairfield, resigned.

CEDRIC NORTHROP, M.D.,† a member of the Washington State Department of Health, Seattle, since December, 1941, has been appointed Chief of the Division of Tuberculosis Control.

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* Fellow A.P.H.A.
† Member A.P.H.A.

CHARLES EDWARD SMITH, M.D., D.P.H.,* has been promoted to a full professorship in public health and preventive medicine at Stanford University, San Francisco, Calif.

DEATHS

CHARLES RALPH ARMSTRONG, for 30 years Superintendent of the Trudeau Sanatorium, Trudeau, N. Y., died November 9, at the age of 71.

HOWARD B. METTEL, M.D.,* of St. Louis, Mo., died recently. He was Chairman of the Maternal and Child Health Section of the American Public Health Association.

LEROY A. WILKES, M.D.,* of Trenton, N. J., died November 29, at the age of 59. He was Executive Officer of the Medical Society of New Jersey, and former Medical Director of the Austrian child health program of the Commonwealth Fund of New York. Dr. Wilkes was a Fellow of the American Public Health Association, and served as Chairman of the Child Hygiene Section 1931–1933, Vice-Chairman in 1934, and Chairman again in 1935.

* Fellow A.P.H.A.

CONFERENCES AND DATES

American Academy of Orthopaedic Surgeons. Chicago, Ill. January 17–21.

American Association of School Administrators. St. Louis, Mo. February 26–March 2.

American Society of Civil Engineers—Winter Meeting. New York, N. Y. January 19–22.

Annual Forum on Allergy. Cleveland, Ohio. January 9–10.

American Water Works Association—
Canadian Section—Royal Connaught Hotel, Hamilton, Ontario, Can. April 7–9.
Pacific Northwest Section—Bellingham, Wash. May 7–8.
Conference on War Winning Water Works Operations—June 14–17. Carter and Statler Hotels (co-headquarters), Cleveland, Ohio.

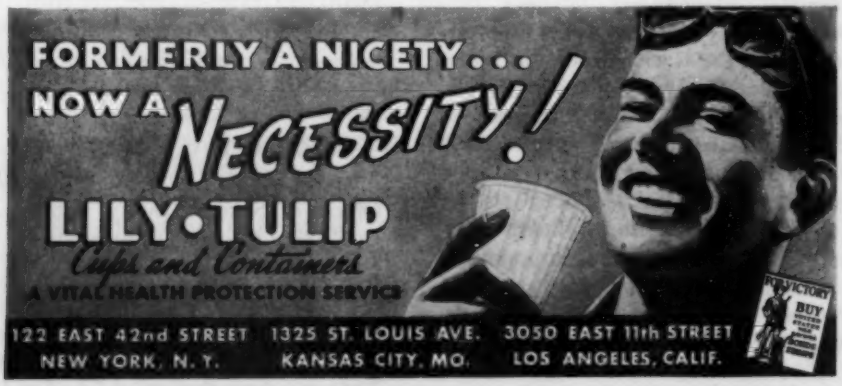
Clinical Orthopaedic Society. Chicago, Ill. January 18–21.

Fifth Annual Congress on Industrial Health—sponsored by the Council on Industrial Health of the American Medical Association. Palmer House, Chicago, Ill. January 11–13.

National Conference of Social Work. Cleveland, Ohio. May 23–29.

Rocky Mountain Medical Conference. Biennial Conference. Albuquerque, N. M. May 18–20.

Social Hygiene Day—American Social Hygiene Association. February 3.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